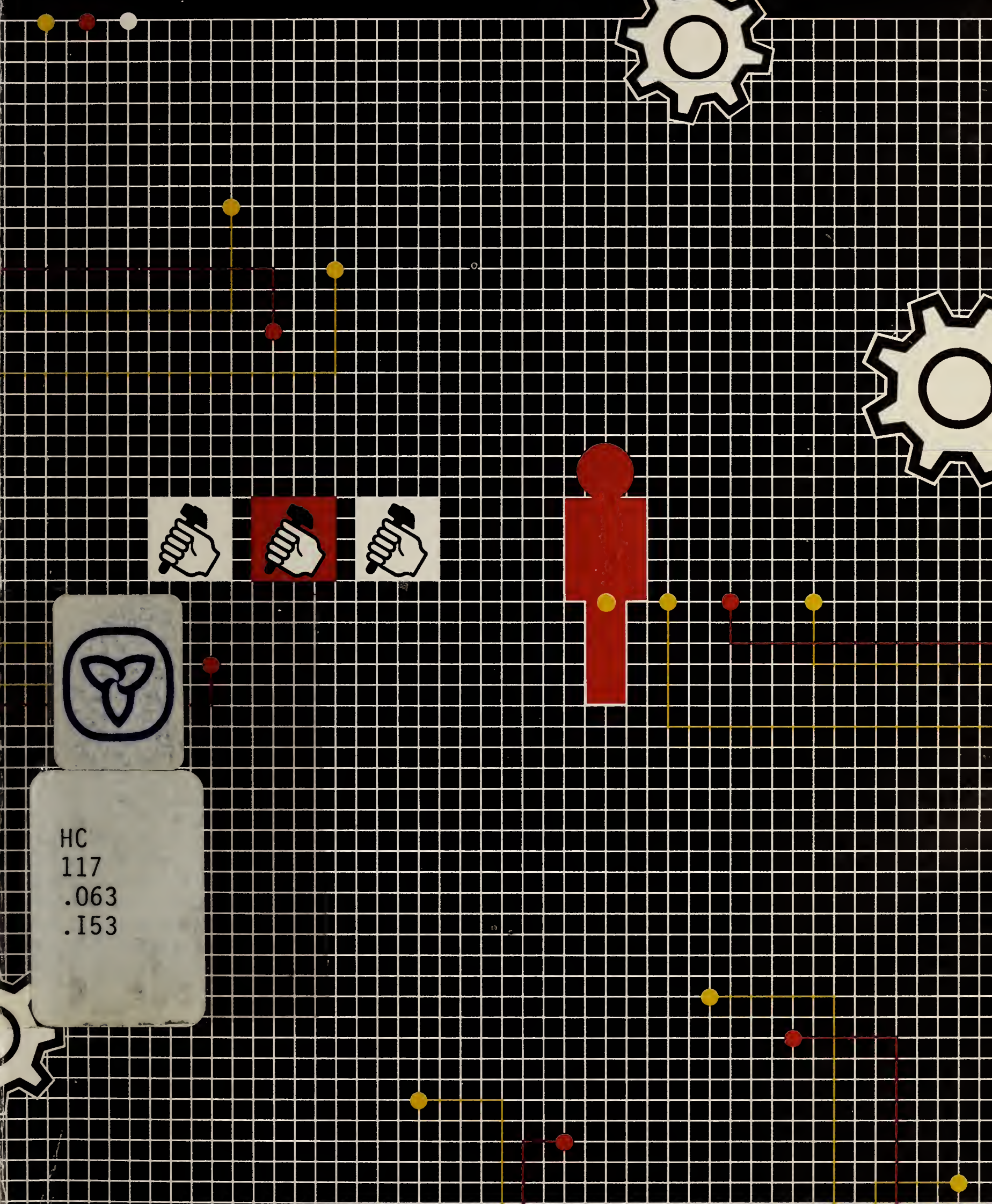
Industrial Policy in Ontario

Policy Study Series

Richard M. Bird



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Ontario Economic Council

Richard M. Bird

in association with Paul Davenport, Christopher Green, Yehuda Kotowitz, William J. Milne, Ronald S. Saunders and William G. Watson

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This report, printed after the Ontario Economic Council was disbanded in late 1985, reflects the views of the authors and not necessarily those of the Ontario Economic Council or the Ontario government. The Council established policy questions to be investigated and commissioned research projects, but it did not influence the conclusions or recommendations of authors. The decision to sponsor publication of this study was based on its competence and relevance to public policy and was made with the advice of anonymous referees expert in the area.

Contents

Preface

This study represents the culmination of a research project that began in 1982 with the publication of an Ontario Economic Council Discussion Paper, *Industrial Policy in Ontario and Quebec*, prepared by several of the present authors under the auspices of the Institute for Policy Analysis of the University of Toronto. Some of the ideas sketched in that paper seemed worthy of further exploration, and several small additional studies related to the subject of industrial policy were, therefore, commissioned by the Ontario Economic Council. Five of the studies resulting from this project, which was directed by Richard M. Bird and Christopher Green, have since been published: William Watson, *A Primer on the Economics of Industrial Policy* (1983); Ronald S. Saunders, *Aid to Workers in Declining Industries* (1984); Christopher Green, *Industrial Policy: The Fixities Hypothesis* (1984), Yehuda Kotowitz, *Positive Industrial Policy: The Implications for R & D* (1985); and William J. Milne, *The Interdependence of Macroeconomic and Industrial Policy* (1985).

The present volume builds on the conclusions from these earlier studies, draws on additional unpublished work by Christopher Green, Paul Davenport, and William Milne, and adds some new material on such topics as the growth of industrial policy and the federal/provincial context of industrial policy. Although all those involved in this project have thus contributed substantially to the present study, the sole responsibility for its contents lies with Richard Bird.

Neither the present study nor the series of reports of which this is the final one purports to cover comprehensively the entire complex area subsumed by the words 'industrial policy.' At best, some salient aspects of the subject are discussed here. Despite its limitations, however, we hope that this study will serve its intended purpose of reorienting public discussion towards those areas of government policy that seem most

likely to support and influence industrial development in constructive directions.

Special debts are owed to Thomas J. Courchene and David W. Conklin of the Ontario Economic Council for their patient support of this project, to Sharon Glied for research assistance, to Lorelle Triolo for her untiring work in bringing this report, as well as most of the earlier reports upon which it builds, to its final stage, and to Lenore d'Anjou, whose editing vastly improved the text. As always, the Institute for Policy Analysis of the University of Toronto provided a most supportive setting for policy research. Last, but by no means least, the work could not have been carried out without the financial support of the Ontario Economic Council, for which we are most grateful.

1
Introduction and summary

> Industrial problems in today's world are common concerns of all advanced and developing countries. The structure of industry in many countries has in the last ten years undergone fundamental changes due to a number of internal and external factors. Demography and labor mobility (or immobility) as well as technology, energy, terms of trade, and political factors have all worked to affect and alter the basis of industrial growth. . . .Private and public institutions will continue their efforts to adapt to or, in some cases, to resist changes in international competitiveness.
>
> John Pinder, *National Industrial Strategies and the World Economy*, 1982

In recent years, Canada and Ontario have increasingly been subject to the forces sketched in the epigraph, and both the federal and the provincial government have attempted to shape the industrial structure in a variety of ways. Industrial strategy has become almost as common a subject of popular and scholarly discussion as the weather – although many people, within and outside government, not only talk about it but think we should do something about developing one, soon.[1]

Of course, Canada, like every country, has long influenced the growth and structure of its industry in many ways. In Michael Bliss's words:

> From an historical perspective the most striking characteristic of Canadian industrial policies is that there have been so many varieties of them. There have been broad macroeconomic policies affecting the environment in which all Canadian economic activity takes place; there have been narrow, specific policies to subsidize or protect this or that industry, this or that firm, this or

> that region. . . .Some have been developed to maximize economic growth; some to maximize employment; some to redress regional imbalances; some to counter foreign influence; some to increase competition; some to reduce competition; some to reward success; some to cushion failure. Policies have originated as a result of industrial requests for protection or subsidization; consumer demand for regulation; Canadian nationalist sentiment; politicians', civil servants' and economists' perceptions of the public interest in industrial development. (1982, 40-1)

Two important characteristics of the Canadian economic environment in recent years have been the discouraging trend of economic activity in general and the growing emphasis on provincial economic policies. These characteristics are closely related. An important reason for the recent stress on explicitly provincial policies to encourage, foster, and protect particular industries has undoubtedly been the pressure exerted by adverse economic circumstances in the country and the world as a whole. In Ontario, the apparent decline in the province's relative industrial dominance within Canada has given rise to concern, as has the country's reputedly declining position in world competition. The resulting provincialization of economic policy, in turn, has fostered what some see as the balkanization of the country and decreased the capability of the national government to cope with the pressures that, to some extent, gave rise to these policies in the first place.

Governments at all levels have thus reacted to the difficult economic circumstances of recent years with policies intended both to protect troubled industries and to influence the direction of future industrial growth. At least one or another of the hundreds of current federal and provincial industrial-assistance programs probably affects every major industry and every part of the country.[2] No one contends that these policies are more than a hodgepodge. But over the past ten or fifteen years, governments at both levels have heard increasing discussion on the 'need' to move to a more coherent package of policies intended to shape industrial structure and performance in particular ways.

WHAT IS INDUSTRIAL POLICY?

One problem in studying industrial policy is that everyone seems to have in mind a different definition of the subject. In other studies, we ourselves define industrial policies as broadly as 'any programs of government that relate directly to the economic activity of one or more of a nation's regions, industries, firms, or plants' (Green 1984, 64, n.2) and more narrowly as 'any policy that involves a conscious attempt by a government to alter the composition of either the outputs produced in the

nongovernmental sector of the economy or the inputs used to produce this output' (Watson 1983b, 2).

However broadly or narrowly the definitional net is cast, many subclassifications of industrial policy are possible. For example, they can be classified as 'interventionist' or 'noninterventionist'. Noninterventionist policies can be divided into general macroeconomic policies and general structural policies (such as free trade and competition policy). Interventionist policies, to which most attention has been directed, particularly by those who want to develop an industrial strategy, can be divided into general industrial policies, industry-specific policies, regional policies, and firm-specific policies; they can also be divided into those that promote growth, those that protect against change or decline, and those that assist adjustment (the reallocation of resources away from declining industries). Policies can also be divided in terms of the policy instruments employed: regulations, subsidies, tariff protection, nontariff barriers, procurement policy, government ownership, tax incentives, and so on.[3]

Although such lists could be extended considerably, there is little point in doing so here. On the whole, although most writers agree that, in one way or another, almost every public policy affecting business – particularly, those policies intended to promote, defend, or assist specific industries – falls within the ambit 'industrial policy,' in the end everyone defines the term to suit his or her own purposes.

Following this tradition, in the present study we understand 'industrial policy' broadly as a set of policies affecting industrial structure. Such policies may operate at the level of the whole economy, of an industry, or of firms. They may be aimed at choosing and backing winners, at saving losers or helping them to adjust, or at providing an appropriate environment for economic forces to determine the outcome. They may be developed separately for different purposes (perhaps by different levels of government) and may even work against each other, or they may be consciously co-ordinated to achieve some desired outcome, such as increasing market share in a particular industrial segment. About the only thing that these diverse policies have in common is that their effects on industrial structure are (or may be) considered one of their more important aspects.

Should policy be strategy?

In our broad sense, every country obviously has an industrial policy. It is a different question whether a collection of observed policies add up to a conscious, meaningful industrial strategy – or whether they can or should be thus aggregated. The discussion of industrial strategy is not a

central focus of the present study, however. The argument on both sides of this question is too reminiscent of the inconclusive postwar debates on the pros and cons of broad-scale economic planning – of government-directed (or government-influenced) *dirigisme* in France versus 'liberal' market-led growth in West Germany – to be conducive to rational debate and resolution.[4]

The extensive postwar experience with attempting to plan economies does, however, appear to offer three lessons.[5] First, the levers of macroeconomic policy must be set more or less correctly. For example, it never pays to fight international pressures on exchange rates for long, and inflation is a dangerous policy. Second, flexibility and adaptability, whether government-directed or market-induced, are essential ingredients of success. Third, and most important, different models and methods produce the best results at different times for different countries.

Much the same seems true of industrial policy. If a government gambles big – as Quebec did on the James Bay project and Ottawa on the CANDU reactor – it may win for essentially unforeseen reasons (the oil crisis), or it may lose the same way (high real interest rates and Three Mile Island). Sometimes state-directed efforts at industrial revival have more or less been abandoned because of adverse macroeconomic developments, as in France under Mitterrand. Sometimes they have succeeded in similar circumstances because macro policies were more suitable: the recent Swedish devaluation under Palme may be an example. Sometimes such efforts seem to succeed spectacularly, but only after a long period of apparent failure and without any suggestion that they will inevitably continue to do so, as in postwar Japan. Sometimes they continue to fail over an even longer period, as in postwar Britain.

It is far from clear what, if any, lessons for Canada, let alone Ontario, can be derived from such very different experiences in very different circumstances in very different countries. What does seem clear is that we are unlikely to find any single solution that could possibly cure the variety of ills – 'deindustrialization', the technological revolution, the increasing interdependence of the world, and dozens of other bogeys – with which industrial strategy is apparently supposed to cope. The best we can do is probably all that we really can or should do: namely, to continue to cope day to day with the difficult, messy, and constantly changing reality in which we live.

This sort of 'low-tech' advice is not easy for government policy makers to buy when they are subjected to seductive appeals for the glamorous, novel technology associated with the emperor's new clothes. Even Frank Hahn, who approves of our advice, has called it a 'wishy-washy, step-by-

step, case-by-case approach' (1982, 2). Nevertheless, one of the most important conclusions of the present study is that the Ontario government must resist the temptation to pursue some elusive, high-risk industrial strategy. Judged by this standard, Ontario government policy to date has been generally in accord with what seems, by common consent, to be the genius of notoriously risk-averse and pragmatic Canadians and with the reality of the inevitably convoluted and heterogeneous federal political process. What the times call for, in our view, is not something completely different but rather more of some present policies and less of others. The policy mix needs adjustment, but there is no strong case for the state to take the leading role for which some proponents of industrial strategy seem to hanker.

The role of government

In practice, all Canadian governments, regardless of their ideological persuasion or economic circumstances, have operated and will doubtless continue to operate a wide range of industrial policies. Their objectives are so diverse and they have been implemented by such a variety of instruments and political and bureaucratic organizations that it would be a miracle if they all pointed in the same direction at the same time. Since miracles are in short supply, it comes as no surprise that these policies often seem contradictory in various respects. This does not mean, however, that the existing congeries of federal and provincial industrial policies has no net effect on the structure and development of Canadian industry. Rather, as argued in more detail later, it has at least some consequences that are not particularly desirable. A supremely important task for Ontario is thus to get our policies 'right'.

The reality is that governments can, do, and must play an active role in shaping Canadian industry. This essential government role takes at least three distinct forms:

1 Setting the 'right' macro framework,

2 Assisting industrial adjustment (particularly adjustment by workers),

3 Providing a set of structural policies appropriate for the making of allocative decisions by the private sector.

In addition, governments may also have a role to play in more directly influencing and directing investment decisions. As shown in detail later, however, it is with respect to this last aspect of government's role – the only one considered worth discussing by many industrial-policy advocates – that the case for a substantial level of government activity is weakest, both because it is unclear what governments should do and

because it is not always obvious what they can do in a small, open economy.

It is unfortunate that so much attention has been paid to this dubious area when it seems so demonstrably clear that governments in Canada have not been doing all that they can or should do to provide the infrastructure of macro, structural, and adjustment policies needed for sound industrial development. Indeed, the persistent failure to adopt 'good' general policies of this kind is undoubtedly one cause of much pressure for specific assistance to exports, to small and medium-size business, and to this or that industry. Witness, for instance, the magical way Canada's change of exchange-rate policy in the 1960s eliminated the then-loud pleas for export subsidization, as well as the all-too-predictable way in which the United States' fiscal and monetary policies are fostering protectionist pressures in that country. The apparent inability of governments to carry out properly the tasks that are undoubtedly within their unique sphere of competence makes it seem improbable that they would be able, in effect, to take over from the market the basic task of resource allocation.

Albert Hirschman (1967) noted a tendency on the part of governments in developing countries to launch gigantic industrial projects at a time when they were palpably incapable even of dealing with the apparently much simpler tasks of basic government administration. He attributes this rather curious behaviour in part to what he calls 'the principle of the hiding hand': the difficulties of tackling new activities are largely hidden from those to whom they are new. The difficulties of customary activities, such as agriculture, are known all too well.[6]

The parallels between the planning efforts in the developing countries and much of the current industrial-policy debate in Canada seem clear. Utopian solutions of many sorts, sometimes disguised as the application of some apparently well-tried model (say, the one called 'the Japanese system') have been urged upon governments by those whose concern seems often more to replace the old with the new than to ensure that the change will, on balance, be beneficial. Hiding costs and exaggerating benefits are practices all too well established in the Canadian policy process. What seems needed to restore balance to the public discussion of industrial policy in this country is a clearer appreciation of the true benefits and costs associated with many commonly advocated industrial policies, as well as more widespread realization of the potential net benefits for industrial development and general well-being that might result from getting the infrastructure of government policies right.

Many industrial-policy advocates, of course, condemn such cautious counsel as evidence of economists' bias for using the market wherever

possible. They are right. But they are wrong in their apparent belief that the market approach has been tried, and failed. On the contrary, to paraphrase Shaw, market-directed growth (within the limits set by government rules) is a good idea that has hardly been tried in Canada.

There is no shortage of problem-solving capacity in Canada's public or private sector. However, too much of its public-sector energy has been devoted to attempting to deal with the perceived problems of the private sector and too little to setting the right framework for the private sector to work out its own problems. One result of this misdirection of effort is that too much private-sector energy, in turn, has been devoted to attempting to shape public policies in order to maximize private advantages.[7] Thus, private decision-makers have too little energy left to get on with the job they do best – namely, making the millions of small decisions that within the proper framework and over time would produce the 'right' industrial structure for the country and the province within our changing world.

The resulting structure might not accord with anyone's preconception of what it should look like. But if government does its job correctly (including, of course, attaching due weight to such important non-economic factors as cultural nationalism), such a structure should provide the best of all possible worlds for Canadians and almost surely a better one than if we heed the sirens' song of the industrial strategists.

OUTLINE OF THE STUDY

Such is the message of the extensive body of discussion and analysis summarized in the present study, which is part of the ongoing debate between (more or less) market-oriented economists and would-be planners.

We make no claim that its evidence or conclusions are new. Indeed, since it largely summarizes and builds on the five other works in this series (Watson 1983; Saunders 1984; Green 1984; Kotowitz 1985; and Milne 1985), which themselves were, to a considerable extent, summaries of other studies, it is at least two removes from an original contribution. This approach has the advantage, however, of allowing us to cover a lot of ground. The extensive evidence thus reviewed permits a wider field of vision than that of many analysts, some of whom seem unable to distinguish the forest from the trees.

Chapter 2 reviews briefly the evidence on the growth of government and of interventionist state policy in Canada. Chapter 3 discusses in somewhat more detail the array of existing micro industrial policies at the federal and provincial levels, with particular attention to Ontario.

On the whole, this review lends substantial support to Bliss's concise summation of an earlier overview:

> There has been little unity or coherence to Canadian industrial policy. Policies have sometimes been contradictory, sometimes complementary, sometimes simply confused. Whether they have succeeded or failed, on balance, cannot be determined. (1982, 42)

In short, although industrial policy has been much discussed and long practised in Canada, the appropriate role for governments, federal and provincial, remains obscure.

Chapter 4 considers some aspects of what may be called macro industrial policy from a number of perspectives. First, it recalls the intricate connections between macroeconomic and industrial policies. Then it discusses, as an example of the effects of structural policy, some of the ways in which federal and provincial taxation policy influence industrial structure; following is a brief review of the appropriate role of the state with respect to research and development. Finally, it considers the role of policies intended to assist workers in adjusting to changing economic circumstances. Although the discussion in this chapter draws heavily on the earlier works in this series and is obviously both selective and condensed, in total it touches on almost every relevant aspect of the industrial-policy debate – foreign experience, the international context, sunrise and sunset industries, trade policy and so on.

The concluding chapter of the study sums up the central points emerging from the preceding discussion as well as from the general debate on industrial policy; the perspective is that of Ontario and the chief consideration what sort of provincial industrial policy seems both to make sense and to be feasible for the next few years. Although we emphasize that the conclusions set out in this chapter do not rest on significant new theoretical or empirical research, they do reflect both a thorough review of a wide range of existing literature and studies and, in our judgement, a fair assessment of the available evidence on the industrial-policy debate.

NOTES

1 There is nothing new about such debates in Canada. As Diebold notes, 'With a bit more land than the United States, Canada has about one-tenth of the people and over the years has shown about fifty times the interest in industrial policy (which Canadians are apt to call industrial strategy)' (1982, 206).

2 As a recent Quebec government report puts it: 'Today, in fact, no investment in manufacturing takes place east of the Ottawa River to the Atlantic seaboard without some form of subsidy' (Québec 1984, 6).

3 An even wider variety of definitions and classifications is found in the many other studies of this subject. Pinder (1982), for example, distinguishes general industrial policies, which relate to factors of production (labour, capital, and research and development), to firms (competition, small business), and to geographical areas, from 'sector policies', which he categorizes as defensive, contractionary, or positive. Adams and Klein distinguish general or nonselective policies from policies specific to particular activities (such as R&D), regions, sectors, industries, firms, and even projects. They also refer more broadly to industrial policies as 'all measures that will improve the economy's supply potential: anything that will improve growth, productivity, and competitiveness' (1983, 3). For more examples, see Watson (1983, 1-2). Even if one focuses simply on explicit government assistance to specific industries, it is difficult to pin down any generally accepted definition. See, for example, the discussions of industrial subsidies in Shoup (1973) and Wiseman (1981).

4 In today's discussions, France is likely to be replaced by Japan, West Germany by the United States, and 'indicative planning' by 'industrial strategy', but the arguments and, indeed, some of the proponents on each side are much the same as in the earlier debate, and the results are equally inconclusive.

5 For a useful recent comparison of the postwar experience in ten countries, see George (1983).

6 Characteristically, Hirschman finds some virtues in the often-spectacular failures resulting from such attempts at large-scale industrialization. At best, he suggests, the self-deception inherent in overestimating the benefits and underestimating the costs of tackling something new may have some transitional value in overcoming inertia. Such arguments appear to carry little weight with respect to industrial policy in Canada. As shown in Chapters 2 and 3, our problem is not that we have done too little but that we have done too much and to make matters worse, they have been the wrong things.

7 This theme is developed extensively in Courchene (1980) and Hartle (1983).

2
The growth of industrial policy

Canadians have shown a remarkably strong and consistent taste for more action by government designed to influence the economic behavior of firms and individuals in the private sector. They have frequently elected governments which, at the end of their term, have left a larger public sector than when they came to office. The cumulative effect of millions of small decisions has changed government from a small but important actor in the economy to the dominant entity in the nation's economic life.

J.L. Howard and W.T. Stanbury,
'Measuring leviathan', 1984

Government intervention constitutes a large and important aspect of Canadian life, and it has always done so. Whether observers view this fact negatively or positively, they all agree that Canada, in terms of commitment to the welfare state (Kudrle and Marmor 1981), reliance on private voluntarism (Bird and Bucovetsky 1976), structure and nature of the public sector (Tait and Heller 1982), and scope and intensity of industrial policy (Diebold 1982), is and always has been fairly government-minded, considerably more so than the United States although less so than most European countries. Canada's mid-Atlantic position in this respect may, in part, be attributable to what can be called its political culture. In a sense, Canada lies halfway between the United States, with its strong economic markets and weak political hierarchies, and Europe, with its weak markets and strong hierarchies. Canada has both strong hierarchies, owing largely to its historical origins and development, and strong markets, owing largely to its openness to international economic forces.[1]

Parts of this chapter draw heavily on unpublished work by Christopher Green.

Many other reasons – economic, political, cultural – can be offered to explain the size, nature, and growth of government activities in Canada.[2] The task of the present chapter, however, is simply to demonstrate that government intervention in markets, even more than government itself, has constituted one of Canada's major postwar growth industries. Direct government expenditures, public enterprises, taxes, direct and indirect subsidies to business, and regulatory activities have all increased in Canada in recent years.

Since the scattered information available on this growth cannot meaningfully be combined into a single quantitative indicator of the magnitude of industrial policy, the balance of this chapter comprises disparate observations and numbers, taken from a variety of sources. Despite the partial and fragmentary nature of the evidence, the inescapable conclusion is that, in the perhaps slightly overwrought words of Howard and Stanbury:

> The scope of government activity is simply awesome. . . . It is virtually impossible to think of any economic activity in the private sector that is not directly or indirectly regulated by one or more levels of government. (1984, 94)

PUBLIC EXPENDITURE

Several important features of government expenditures in the postwar era are set out in Table 1.[3] First and in some ways most striking, the sheer size of government spending as a proportion of Gross National Expenditure (GNE) approximately doubled over a thirty-five-year period. Using real figures reduces the rise somewhat, but it remains in the same ball park.

Second, the government's nominal expenditure on goods and services – 'exhaustive' expenditure – also approximately doubled relative to GNE over the same period, as shown in the third column of the table. But when these data are expressed in real terms, accounting for changes in the relative prices of what government buys, we see that the share of national output directly consumed by government has increased relatively little and has even decreased since the mid-1960s. The purchase of goods and services accounted for 73 per cent of real expenditures in 1957 but only 46 per cent in 1982.

The inescapable conclusion is that the expansion of transfer expenditures accounts for the entire real increase in total government spending over this period (from 29 to 44 percent of GNE). The rise in transfers was particularly marked in the late 1960s and early 1970s (as a result of changes in the main transfer programs), as well as in the early 1980s (as

TABLE 1
Canadian government's spending, 1947-82

	Total (as % of GNE)		Goods and services (as % of GNE)		Federal (as % of GNE)	Transfers (as % of personal income)
	Nominal	Real	Nominal	Real		
1947	24%	29%	12%	18%	14%	8%
1957	27	30	18	22	15	8
1967	33	34	21	23	14	9
1977	41	40	24	22	16	13
1982	47	44	25	21	20	14

SOURCE: Bird (1979a) and Canada (1984a).

a result of the marked recession). As shown in the last column of Table 1, transfers to individuals in Canada have almost doubled in importance as a source of personal income since 1957, with most of the increase taking place in the last fifteen years.

Finally, as the second last column in Table 1 makes clear, most public spending in Canada is not by the federal government but by the provinces (and their dependent municipal and hospital sectors). Sub-national expenditures on goods and services are particularly important. Most of the increase in transfer payments since the late 1960s, however, has come from increased federal expenditures.

As a proportion of GNE, social spending (on health, education, and welfare) rose from 14 per cent in 1965 to 21 per cent in 1975 (and stayed there in 1980); almost all the increase was attributable to expanded welfare payments (Bird 1982). Government's role as a provider of final goods and services to Canadians thus rose sharply, especially in the late 1960s (although it began to decline in the late 1970s).[4]

Infrastructure and industrial policy

This growth in government's role in the 'production' of consumer goods was consistent with the lack of change in its consumption of national output, reflecting a marked shift away from the provision of 'infrastructure', such as defence. Yet one of the most important roles of government – a role that may constitute the oldest form of industrial policy in Canada – is to provide the infrastructure upon which and within which the market system functions. In this respect, the traditional tasks of the protection of persons and property are essential.[5]

Thus, the relative decline in governmental spending on infrastructure may not augur well for future industrial development in an increasingly

complex, urbanized society. Such recent phenomena as the rapid growth of the private policing industry may suggest that in the long run it would be more sensible (and perhaps even cheaper) to devote more resources to maintaining and improving public-sector alternatives.

Similarly, nature and history have decreed that public expenditures on transport and communication have always, in one way or another, been essential ingredients in Canada's development – not just in safeguarding the national consciousness, or realizing the national dream, but in supporting (and, indeed, often making possible) the development and exploitation of natural resources and industrial potential. Little, if any, of the recent growth of government in Canada is really attributable to such expenditures, however. Indeed, government's role as a provider of physical infrastructure has decreased so much in recent years that it is not clear that the huge capital stock of roads, seaports, airports, and so on is being adequately maintained. More, not less, public expenditure may be needed in the future if Canada's industrial development is not to be crippled by inability to move goods and information expeditiously within the country and abroad.[6]

Social expenditures and industrial policy

A somewhat similar argument may be made with respect to the funding of education. Any country's most important resource is its people, and the standard of education required to cope with the rapidly changing world is clearly rising. Yet the share of resources going to support education, although large, has not changed much in Canada in twenty years. As in the case of policing, private-sector alternatives have been expanding in recent years, perhaps in response to perceived need, perhaps because of the high cost and overly bureaucratic and uniform structure of the quasi-monopolies that have been established in every province with respect to elementary and secondary education. Although the variety and flexibility resulting from some of the developments outside the public education system are doubtless to be welcomed, in the long run it might make more sense (and perhaps even be cheaper) to reform the public system in the same direction rather than to replace it or to extend further the costly nonsense, already visible in some areas, of empty public schools standing next to newly built private schools.[7] The need for increased public spending on education seems even clearer for continuing education and the postsecondary level, which surely is the cutting edge of the 'knowledge economy' so many pundits are declaiming to be upon us.

Even for outright transfer payments, which have accounted for most of the increase in government spending in recent years and which are

strongly criticized by some opponents of the expansion of government spending (for example, Grubel 1984), one can make a case that such outlays are not expensive luxuries to be cast aside in hard times but policies essential to any advanced industrial nation. A social-security system is needed to replace the cushion once provided by the vanished extended family. An unemployment insurance system is needed to replace the lost possibility of returning to the family farm in bad times. Some system of adjustment assistance to people affected by unforeseeable change is needed to provide a safety net against the fast-changing hazards a modern industrial society presents to personal economic security. A properly designed transfer system thus constitutes an essential part of the social infrastructure in any industrial society that wishes to float in the turbulent seas of today's world without throwing its weak, its helpless, and its less competent members to the sharks.[8] That our enormous existing transfer system fails to accomplish this task satisfactorily is indeed a serious condemnation. But this failure suggests not the desirability of discarding the system, but rather the need for a better designed one.

Much of what governments now do in Canada – from their most traditional administrative functions through many of the programs designed to comfort the afflicted, the sick, and the helpless – are thus not frills that could or should be cast aside to unleash the potential of the private market. Rather, they are essential to ensuring acceptable outcomes from market actions.

Too many current critics of government policy neglect the fact that if market outcomes are not acceptable in a country such as Canada, society will simply not allow the market to function. The task of the constructive critic is not simply to deplore this reality but to suggest alternative mechanisms for coping with unwanted outcomes while allowing the market to function efficiently. We believe that providing the 'right' infrastructure for markets in a modern society inevitably includes a substantial amount of government transfer activity.

Indeed, one reason for the persistence of many of the misconceived government policies castigated later in this study – protectionism, bailouts, most so-called economic regulation, and so on – is precisely that government is not performing this essential task adequately. Unemployment insurance, for instance, in principle constitutes a necessary piece of the support system for industrial adaptation. To do its job correctly, however, it clearly needs to be reformed.[9] Similar comments are valid for almost every existing activity of government (Bird 1976; Bird, Bucotvetsky, and Foot 1979).

An essential ingredient of *any* successful industrial policy is thus a properly functioning public sector. The idea behind governments' present roles in many spheres of Canadian life is thus often good; the execution of these roles is all too often lamentable. Whether one thinks what government does can be differentiated from how it does it turns out to be important. The pessimists think governmental failure is virtually inevitable and hence downplay the essential role of government. The optimists simply ignore the possibility of such failure. Although the latter view now seems generally discredited, the correct course is not to swing to the other extreme (as has now become fashionable in some circles) but rather to take a more realistic, case-by-case look at exactly what governments do, exactly how they do it, and what improvements seem possible and desirable. To some extent, that is what this study and its predecessors in this series have attempted to do.

PUBLIC EMPLOYMENT

An aspect of public-sector growth that particularly concerns some analysts is the growth of public employment.[10] It is thus of interest to consider briefly exactly what has happened to public-sector employment in Canada, and what implications, if any, these developments have for industrial development.

As we saw in Table 1, Canadian governments' real purchases of goods and services have not expanded in recent years. Since the major item that governments purchase is labour services, it should come as no surprise that total public employment – although very large (close to one-quarter of all employment) – has not expanded significantly as a proportion of total employment in Canada over the last two decades. Bird and Foot (1979) show the growth of public employment, by level of government and type of activity, for the 1961-75 period. Table 2, which brings those estimates up to 1980, reveals that the composition of employment established in the early 1960s has also generally persisted. The provincial and municipal sectors (including schools and hospitals) continue to account for about two-thirds of all public employment. Employment in public enterprises has become a bit more important and direct federal employment a bit less,[11] but no major swings are evident.

These public-employment figures have some interesting implications for industrial policy. In the first place, the public sector in Canada is not only the largest supporter of postsecondary education; it is also the major employer of highly qualified labour, employing at least two-thirds of all Canadians with postsecondary education (Bird, Bucovetsky, and Foot 1979).[12] Given that Canadians as a whole have a lower level of formal education than do Americans, particularly with respect to postsecondary

TABLE 2
The composition of public-sector employment, 1976-80

	Federal government[a]	Provincial government[b]	Municipal government	Education[c]	Hospitals[d]	Public Enterprises[e]	Total
1976	20.3%	18.2%	12.2%	18.0%	17.1%	14.2%	100.0%
1977	20.5	18.7	12.2	18.0	16.5	14.8	100.0
1978	20.1	18.4	12.5	17.7	15.9	14.3	100.0
1979	20.2	18.2	12.5	17.5	15.4	15.2	100.0
1980	19.3	18.6	12.5	17.8	15.8	15.6	100.0

NOTES:
Although constructed to be as similar as possible to the data for 1961-75 assembled in Bird and Foot (1979 appendix), the figures underlying this table are *not* directly comparable. In particular, the figures for the education sector (and thus for the total number of employees) are substantially less than the estimates in the earlier source, essentially because data on nonteaching, casual, and vocational employees were not available. The result is obviously to make all the other categories appear proportionately larger than in the earlier study. This series ends in 1980 because only partial data were available from subsequent years.

a Includes armed forces.

b The source has included BC general government employees since 1979: figures for earlier years were estimated on the basis of linear interpolation between the 1979 figure and that estimated in Bird and Foot (1979) for 1975.

c Includes some private-school employees: see also the general note above.

d Includes mental hospitals; double-counting reduced by deducting provincial hospital employees.

e Includes federal and provincial enterprise employees plus employees or urban transit enterprises.

SOURCE: Statistics Canada (72-004; 72-007; 72-009; 81-229; 83-201;83-205; 83-232) and Canadian Urban Transit Association (1981).

education (Bird 1984b), this high concentration of the more educated part of the labour force in the public sector may have important long-run implications for industrial policy.

Moreover, the substantial upgrading of the educational qualifications of public employees in recent decades has led to the widespread perception that average public pay levels are significantly above those in the private sector. In fact, the more systematic comparisons reported in Bird, Bucovetsky, and Foot (1979) suggest that, on the whole, there is little, if any, differential in compensation at the higher levels of employment and only a modest positive differential (particularly for females) for less skilled workers. More generally, there is no evidence that public-sector compensation levels in Canada have influenced private industrial development adversely by, for example, inducing general increases in labour costs unwarranted by productivity gains. More long-term damage may have been done by attracting an undue proportion of the 'best and brightest' into the sheltered nest of the public sector, thus reducing the talent pool on which the private sector can draw. It is far from clear, however, that the major fault in this regard lies with the public sector. As Daly (1981) argues, Canadian business has hardly been in the forefront of those attempting to recruit the nation's educational elite.

TAXATION

The connections between public employment and industrial policy, although not insignificant, are not very direct. In contrast, the connections between taxation and industrial policy are direct, many, and in all likelihood, quite significant.

First, direct taxes on corporations have declined in importance as a source of government revenue in recent years. In 1982, for example, corporate taxes – one-third of which accrue to the provinces – accounted for only 10 per cent of total revenues and 13 per cent of total taxes; in contrast, such taxes accounted for 16 per cent of 1975 tax revenues (Canadian Tax Foundation 1984). To a large extent, this development mirrors the relative decline in corporate profits over this period, since as a proportion of pretax book profits, corporation taxes actually rose sharply (largely as a result of inflation) to a high of 47 per cent in 1982. Second, a striking feature of Canadian public finance in recent years is the substantial increase in the size of the public deficit relative to GNP, largely (but not entirely) as a result of recession-induced increases in transfer expenditures and decreases in tax revenues. Although there is little evidence that the resulting increased government demands on Canadian financial markets crowded out private investment in any meaningful sense, the accompanying increases in interest rates and the

generally turbulent financial conditions of recent years must have had an adverse impact on private investment in one way or another. In fact, one of the principal ways in which governments affect industrial structure and development, for better or worse, is through such macroeconomic effects of fiscal (and monetary) policy – a relationship that is examined in more detail in Chapter 4.

Tax incentives

Taxes that are *not* collected are in some ways as important to industrial policy as those that are. 'Tax expenditures' are tax revenues forgone as a result of special tax provisions, such as incentives for investment, that are intended to achieve some policy objective such as an increased rate of industrial expansion. It is generally accepted that corporate tax incentives can be treated as explicit equivalents to direct expenditures intended to influence private economic activity.

Tax expenditures have been an increasingly favoured means of subsidizing or assisting individuals and firms, particularly those facing high marginal tax rates. For example, as shown in Table 3, the federal government's business-related tax expenditures more than doubled between 1976 and 1980; the real increase was close to 60 percent. Tax expenditures for the resource sector and for research and development grew the fastest, presumably reflecting the major policy concerns of the federal government in this period.

By 1982, the estimated cost of federal R&D tax incentives alone had risen to $185 million, in addition to another $20 million in similar provincial incentives. From 1975 to 1982, the cost of federal tax incentives for R&D thus rose more than tenfold in nominal terms and sevenfold in real terms (Canada 1983b).

More broadly, corporate tax expenditures as a proportion of corporate taxes collected rose from 37 per cent in 1964 (Bird 1970) to 75 per cent in 1975 (Smith 1979) to perhaps 85 per cent in 1980 (Canada 1980). Although the figures in the various sources are not directly comparable, the trend seems clear. Increasingly, governments in Canada have moved to means of influencing the actions of private firms that are less visible than simply spending money.

Tax expenditures constitute an implicit form of intervention in markets. In some ways, however, they are gentle interventions. Although they favour certain types of consumption, production and investment activities at the expense of others, they do not involve discretionary bureaucratic decisions as to who gets what. As a rule, they provide benefits only to profitable firms, obviating the danger of supporting losers

TABLE 3
Federal business-related tax expenditures ($ millions)

	1976	1980
Farming and fishing	$ 55	$ 125
Resource sector	575	1,950
Manufacturing	650	1,445
Transportation and communication	330	553
Research and development	40	142
General business and investment incentives	1,655	4,375
Other	795	190
Total	$4,100	$8,780

SOURCE: Canada (1980).

beyond their natural life.[13] Thus in principle there are situations in which tax incentives may be an appropriate tool of industrial policy.

What is much more arguable is whether the impressive panoply of such measures introduced in Canada over the last decade has had any particularly beneficial effects on industrial development or economic growth. In an extensive survey of the literature, Bird (1980b) finds no evidence either that tax incentives have significantly affected the level of investment, or that their undoubted effect in channelling investment into one activity rather than another (see, for example, Bird, Bucovetsky, and Yatchew 1985) has improved the well-being of Canadians as a whole. Even the federal government, the most enthusiastic user of tax incentives, has recently been restrained on the subject of their effectiveness (Canada 1983b). At the same time, however, it has continued to introduce ever more generous examples of this apparently dubious instrument.

The reasons for increasing reliance on the weak reed of tax incentives may lie less in economics than in politics. Canadians seem fundamentally ambivalent in their attitudes towards government, demanding action to deal with perceived problems but refusing to pay, at least explicitly, for what they want (Howard and Stanbury 1984).

SUBSIDIES, LOANS, AND LOAN GUARANTEES

Another obvious and important tool of industrial policy in Canada is subsidies – grants, loans, loan guarantees, and insurance – to firms in specific industries (shipbuilding, milk producers, petroleum refineries, defence producers), to specific functions of firms (research and development, exporting), and to specific kinds of firms with facilities in designated areas (industrial firms in the Maritimes, eastern Quebec, and

other less developed areas of the country, railways in the Maritimes, airlines with northern routes). Table 4 lists the federal government's programs of direct assistance to business and the amounts expended in 1981/2. Of the total of $4.7 billion shown in this table, $2.2 billion went to loan guarantees and insurance (mostly for exports, small businesses, and farmers), $1.6 billion to loans (again, mostly to small businesses and farmers), and the remainder to grants (mostly for training, research and development, and regional development). The comparable total in 1978/9 was $4.3 billion (Davenport et al. 1982).

Direct subsidies to business have ballooned in the last two decades. For example, Table 5 shows the federal and provincial governments' direct payments to Ontario and Quebec firms over the last twenty years. Federal subsidies increased more than tenfold during these two decades, while provincial subsidies went from a negligible amount to almost $600 million in the two provinces combined. As a proportion of Gross Provincial Product, subsidies to firms in Ontario almost doubled over the period, with most of the increase taking place in the 1970s. The rate of increase was much faster than Quebec, where businesses have always been relatively more highly subsidized.

Table 6 shows an example of similar rapid expansion in the level of firm-specific grants under five federal programs. From 1976/7 to 1982/3, the amount of funds authorized for these five programs rose by 43 per cent in real terms. According to Usher (1983), the value of such grants even exceeded the net worth of the recipient firms in some instances.

More generally, government has become an increasingly important source of business finance in Canada through the wide range and scope of its operations in the financial markets. According to the Economic Council of Canada (1982), for instance, the total value of government loans, loan guarantees, and insurance rose from 4 per cent of GNE in 1950 to more than 18 per cent in 1980, with most of this substantial increase attributable to the federal government. By far the largest proportion is for housing, but government has also become a major source of financing for exports and for agriculture and a significant (though much smaller) factor in direct business financing. Much of this financing, of course, involves some subsidization: for 1978/9, the ECC estimated it at $176 million – compared, for example, to the $325 million in firm-specific grants shown for that year in Table 6 or the estimated $135 million in tax expenditures on R&D reported by the Department of Finance for 1979 (Canada 1983b).

A development that is much more dramatic than the continued expansion of the relatively humdrum activities of the Federal Business Development Bank and similar agencies has been the recent, highly publicized

TABLE 4
Major programs of direct federal assistance to business, 1981/2 (or latest year) ($ millions)

	Grants and contributions	Loans	Loan guarantees/ insurance	Total
Financing				
Federal Business Development Bank		$ 866		$ 866
Regional Development Incentive	$101			101
Small Business Loan		258	$ 258	
Farm Improvement Loan			263	263
Fisheries Improvement Loan			28	28
Farm Credit Corporation		628		628
Indian Economic Development Fund	35	70[a]	30[a]	135[a]
Subtotal	$136	$1,564	$ 579	$2,279
Exports				
Export Development Corporation			$1,600	$1,600
Program for Export Market Development	$ 20		——	20
Subtotal	$ 20		$1,600	$1,620
Research and Development and Innovation				
Industrial Energy R&D Program	$ 2			$ 2
Industrial Research Assistance Program	25			25
Enterprise Development Program	84			84
Defence Industry Productivity Program	58	$ 14		72
Program for Industry Laboratory Programs/Co-operation Projects				
Unsolicited proposals	15	—		15
Subtotal	$ 196	$ 14		$ 210
Labour Force				
Canada Manpower Industrial Training	$ 103			$ 103
Canada Manpower Training Program	430			430
Subtotal	$ 533			$ 533
Adjustment Assistance				
Canada Manpower Mobility Program	$ 10			$ 10
Canada Manpower Consultative Service	3			3
Adjustment Assistance Program	3			3
Subtotal	$ 16			$16
Total	$901	$1,578	$2,179	$4,658

a. Maximum amounts.
SOURCE: Canada (1982a).

TABLE 5
Federal and provincial subsidies to business, Quebec and Ontario ($ millions)

	Quebec				Ontario			
	1961	1970	1979	1981	1961	1970	1979	1981
Subsidies to firms[a]								
Federal	61	159	552	739	83	162	656	885
Provincial	19	41	232	238	0	1	297	355
Total subsidies as per cent of								
Gross Provincial Product	0.76	0.90	1.26	1.25	0.50	0.45	0.93	0.95
Nonresidential gross fixed capital formation	6.57	10.52	10.05	10.29	5.13	3.76	8.36	7.58

a Excludes federal oil subsidies
SOURCE: Davenport et al. (1982) and Statistics Canada, Provincial Economic Accounts, 1981.

TABLE 6
Authorized grants under five federal programs ($ millions)

	1976/7	1978/9	1982/3
Enterprise Development Program (EDP)[a]	$ 36.5	$ 39.6	$103.3
Defence Industry Productivity Program (DIPP)[a]	44.9	52.2	132.0
Shipbuilding Assistance Program[a]	68.0	59.2	73.0
Regional Development Assistance Program[a]	55.1	154.4	172.5
Industrial Research Assistance Program[b]	14.5	19.5	31.5
Total	$209.0	$324.9	$512.3

a Industry, Trade and Commerce program.
b National Research Council program.
SOURCE: Usher (1983), updated for this volume by Christopher Green.

series of government loan-guarantees and bailouts to companies in difficulty. Massey Ferguson, Chrysler, Maislin, Consolidated Computer, various Atlantic fishery companies, CCM Inc., White Farm Equipment – the list, like the amounts potentially or actually involved, is impressive and depressing. The federal government has been particularly conspicuous in this field, but Ontario too has been drawn into this unproductive game. Indeed, the history of provincial support for once-promising and all-too-soon failing businesses is long and unhappy (Mathias 1971).

A close look at the many examples of unsuccessful government involvement in business in Canada offers little comfort to advocates of a strong 'promotion' role for government through what John Shepherd (1981) calls 'chosen instruments' – private firms that are, in effect, selected and supported by government as catalysts of industrial growth. Dome Petroleum, Northern Telecom, Mitel, Nova Corporation – these and other firms have been named by analysts as having been so chosen (or perhaps as having so chosen themselves). The recent vicissitudes of Dome, Mitel, and most of the Canadian aerospace industry (Canadair, De Havilland) illustrate the risks in this approach. As George (1983) notes, Canadian experience suggests that subsidized infants are more likely to turn into permanent invalids than to become independent contributors to the general well-being.

PUBLIC ENTERPRISES

Another increasingly used instrument of industrial policy in Canada is the government enterprise. Publicly owned firms have long played a more important role in Canada than in the United States, most obviously in public utilities – transportation, telecommunications and broadcasting, and electric energy – but also, as Table 7 shows, in other sectors

TABLE 7
Federal and provincial government enterprises in Canada, by date of incorporation

Year of origin	Public utility[a]	Industrial[b]	Energy development	Financial insurance and development	Marketing housing and information	Alcoholic beverages and lotteries	Total
1900-9	3						3
1910-9	2						2
1920-9	4	1		1		8	14
1930-9	4			1	1	2	8
1940-9	6	7		2	7	2	24
1950-9	5	1		4	3		13
1960-9	4	9	1	6	9	1	30
1970-9	10	8	7	10	10	4	49
1980-3	1	4			1		6
Total	39	30	8	24	31	17	149

a Includes transportation, energy, telecommunications, and broadcasting.
b Manufacturing and mining.
SOURCE: Statistics Canada (cat. 61-203, 61-204).

of economic activity.[14] Although many of the largest and best-known government enterprises (such as Canadian National, Air Canada, the Canadian Broadcasting Corporation, Ontario Hydro) were created before the Second World War and a number of others came out of the war (such as Polymer Corporation, which is now owned by the Canada Development Corporation), most of the existing ones were created in the last twenty years. Vining and Botterell (1983) estimate, for example, that three-quarters of all provincial Crown corporations have appeared since 1960.

Analysts face considerable difficulty in examining government enterprises in Canada. Comparable statistics are available for relatively few of them. Problems of definition also exist. Thus, although Table 7 shows 149 federal and provincial enterprises, one recent study found as many as 454 federal 'government-owned and controlled corporations' in 1980 (Langford and Huffman 1983); another found 464 federal corporations in the same year – but only 306 in 1981 (Comptroller General, as cited in Howard and Stanbury 1984). Although the number of federal public corporations jumps around from year to year and source to source depending on the precise definitions used, everyone agrees both that the number is large and that it has likely increased significantly over the last ten or fifteen years.

Similarly, the number of provincial enterprises is subject to interpretation. Vining and Botterell (1983) found 233 provincial Crown corporations in 1980, including twenty-seven in Ontario, which may be an understatement.

What is certain is that, in most respects, public enterprises have increased in importance in Canada in recent years. For example, Statistics Canada (cat. 61-203; 61-204) reports that between 1976 and 1980, enterprise sales rose from 22 per cent to 29 per cent of government revenues and from 9 per cent to 11 per cent of GNE; these figures are clearly understatements because they are based only on the relatively few corporations reflected in Table 7. According to one recent study (Vining and Botterell 1983), Crown corporations constituted four of the country's twelve largest nonfinancial corporations and also four of its top twenty financial corporations in terms of assets. In total, the assets of provincial Crown corporations in 1977 came to $62 billion and accounted for 26 per cent of *all* corporate fixed assets – more than the total assets of the federal and provincial governments combined. In Ontario alone, the assets of provincial Crown corporations in that year amounted to 23 per cent of provincial GDP – largely reflecting the enormous size of Ontario Hydro, the second largest nonfinancial corporation in Canada in terms of assets. (Hydro-Québec is the first.) Although not as capital-intensive as

their provincial counterparts, federal Crown corporations, with assets of $29 billion in 1977, were by no means small: Canada Post and CN together had two-thirds as many employees as all federal government departments together, and Petro-Canada and CN ranked sixth and twelfth, respectively, among the country's nonfinancial corporations in terms of assets.

Although all federal and provincial enterprises do not play a direct role in the private sector, many not only do so but originated in the desire of government to facilitate, direct, influence, or replace private economic activity. Examples range from the historic importance in Canadian development of the CN, Ontario Hydro, and Hydro-Québec to the more recent activities of PetroCan and the Canada Development Corporation.

As the case of the CDC suggests, however, the precise public status of some of today's more prominent examples of government business activities is not entirely clear (Hampson 1976). The recent increase in government holdings in the equity of private firms represents a significant departure from the traditional approach of creating public enterprises either from scratch or by nationalizing (or provincializing) existing firms. Ontario's purchase of a substantial interest in Suncor is a much-publicized instance of this new tendency; a more dramatic one is Quebec's significant equity holdings in such companies as Domtar and Noranda through the Caisse de dépot et placement du Québec and the Sociéte générale de financement du Québec (Howard and Stanbury 1984). The precise extent of the control exerted by the Quebec government through these entities is unclear, but the sheer size of the holdings must give it substantial influence. And although the Alberta Heritage Savings Trust Fund and the Alberta Energy Company have not invested as heavily in private equities as have the Quebec entities, their potential to do so is obviously even greater, and recent statements from Premier Lougheed suggest that this potential is likely to be realized (Nelson 1985).

It is presumably developments such as these, difficult though they are to quantify in any meaningful way, that Howard and Stanbury have in mind when they allege that 'Canada has become a government-centered society' (1984, 94). At the very least, the rising use in recent years of public pension funds (Quebec's Caisse), resource revenues (Alberta's Heritage Fund), and the taxing power itself (PetroCan) to increase the public sector's involvement in and influence on leading Canadian industries lends substantial credence to the perception that industrial policy has, in one guise or another and for better or worse, become an increasingly important component of government policy in Canada since the 1960s.

In some ways, the most important kinds of government intervention in the marketplace are not evident in public financial statements. They take the form of controls or regulations relating to prices, output, firm entry and exit, product standards and service quality, working conditions, information provided to consumers, and the like. State regulation of economic activity has probably existed in every period and country throughout history. Nevertheless, it is widely believed that since the 1930s and especially since the 1950s, North America has seen a marked growth in such regulation – a growth worrisome enough to produce a well-publicized movement towards regulatory reform in the United States in recent years. In Canada, similar concern with regulation has produced the Economic Council of Canada's Regulation Reference, numerous studies, and a widely distributed final report (ECC 1981) but, as yet, little in the way of regulatory reform.

The empirical evidence, although far from satisfactory, appears to support the contention that regulation has increased in Canada in recent years. Table 8 provides one rough measure of the growth of regulation since Confederation, based on the original dates of enactment of the 1,748 regulatory statutes in existence in 1978. The figures in parentheses in the table show that the average number of these statutes enacted per decade has steadily increased, from less than 100 in the nineteenth century to about 300 for the nine-year period 1970 to 1978.

Most people know that the enactment of social regulations has increased in recent years in response to concerns about the environment, health and safety, and consumer protection. What is less recognized – but no less important – is that the number of economic regulations has also increased. In the 1970-8 period, Priest and Wohl (1978) counted sixteen new statutes regulating financial markets and institutions, eighteen on energy, fifteen on resource management, twenty on transportation and communication, thirty-six on business licensing, and twenty-nine on professional licensing, compared to only nineteen on environmental protection, twenty-nine on health and safety, nineteen on information and standards, twenty-eight on consumer protection, and ten on occupational health. Even at the height of the consumer revolution of the early 1970s, it appears, governments were as active as ever, if not more so, in their traditional concern with dividing, controlling, and protecting economic interests.

TABLE 8
Regulatory statutes in existence in 1978

	Total	Primarily economic regulation[a]	Primarily social regulation[b]	Both economic and social[c]
Originally enacted				
Before 1900	359	120	90	149
Approx. avg. per decade	(<100)			
1900 to 1949	684	248	242	194
Approx. avg. per decade	(137)			
1950 to 1969	413	120	166	127
Approx. avg. per decade	(207)	(60)	(83)	
1970 to 1978	292	88	119	85
Total 1978[d]	1,744	574	613	557
Federal	136	72	55	9
Alberta	173	60	55	58
British Columbia	177	58	63	56
Manitoba	139	40	48	51
New Brunswick	142	44	45	53
Newfoundland	160	47	63	50
Nova Scotia	152	42	55	55
Ontario	260	74	83	49
PEI	112	31	41	40
Quebec	166	50	51	65
Saskatchewan	181	56	51	71

NOTES
The earlier years may reflect a downward bias to the extent that some regulations enacted then were subsequently repealed and did not exist in 1978; however, most regulations, even after becoming inoperative, remain on the books.
a Regulatory statutes relating to agriculture, fisheries, communications, transportation, energy, resource management, financial markets, and land use.
b Regulatory statutes relating to environmental protection, occupational health and safety, consumer protection, information and standards, intellectual property, health facilities, and culture and recreation.
c Regulatory statues relating to business and professional licensing and, liquor control and 'framework' regulations.
d Does not include four labelled 'miscellaneous'.
SOURCE: Priest and Wohl (1980).

The costs and benefits of regulation

Simply counting the number of regulations does not, of course, tell us anything about the amount of resources they absorb directly (regulators and bureaucrats charged with administering and enforcing them) or indirectly (labour and other factor costs employed in complying with them). Although such costs are hard to measure, crude estimates suggest they are high and growing. One US study, for example, indicates annual costs of regulation in the neighbourhood of twenty times budgetary outlays (Weidenbaum and De Fina 1978). No comparable Canadian estimate exists, but Stanbury and Thompson (1980) conclude that regulation in Canada is about as extensive and has grown about as fast as it has in the United States (using a measure of regulatory expenditures and employment). They note that 29 per cent of Canadian GDP was subject to direct price and/or output controls in 1978, and although they conjecture that regulation has been somewhat less economically burdensome here than below the border (because of Canada's much less stringent environmental and safety regulations), they conclude that private-sector compliance costs were probably ten to fifteen times government budgetary outlays.

Most of the recent objection to the growth and cost of governmental regulatory activities has been directed at social and environmental legislation, rather than economic regulation. Private firms undoubtedly perceive government regulations that require them to take into account the social costs of their decisions as imposing an undesired and undesirable burden. From society's point of view, however, such external costs of private actions *should* be taken into account to achieve the best possible allocation of scarce economic resources. Other much-criticized measures may equally be justified as achieving overriding social objectives, such as nondiscrimination. Indeed, some of the most deplored regulatory actions of government may, in the end, turn out to be an essential component of a sound industrial policy – in the sense of a policy that makes the best possible use of the nation's resources, given national objectives.

Of course, the road to bad policy is often paved with good intentions. Many regulations that can be rationalized in principle as internalizing external costs may in fact be drawn so as to be conducive to inefficiency. Blanket condemnation of social regulation because it gives rise to economic costs, however, is as silly as blanket condemnation of tax incentives because they result in revenue losses. In both instances, both sides of the deal – the costs *and* the benefits – must be taken into account before a sound judgement can be reached. This has not yet been done in the case of social regulations.

What is clear, however, is that almost all economic regulations (occupational licensing, marketing boards, import quotas, and the like), although almost invariably clothed in the sacred vestments of 'the national interest', are in fact directly and explicitly *intended* to be economically inefficient. In effect, the usual purpose of such regulations – once cleared of the rhetoric – is to reduce the overall national welfare in favour of a designated group of beneficiaries.[15] Thus, those who deplore the unwarranted use of government power for purposes of redistribution at the expense of output focus on economic regulation, not social regulation, as the principal villain. More and more such perverse industrial policies are in evidence in Canada in recent years. All too few voices have been raised in protest, probably because the winners gain much and the losers, as a rule, lose very little as individuals – though perhaps a great deal in the aggregate.

Regulation as direct assistance

One form of intervention in the market that provides substantial direct assistance to specific, identifiable firms is production and marketing quotas. At present, the chief examples of this sort of intervention are import quotas on textiles, clothing, and shoes and marketing board quotas for fluid and industrial milk, eggs, poultry, and tobacco. Table 9 presents some estimates of the substantial sums attributable to these quotas, which represent a form of subsidy to firms that simply did not exist fifteen years ago. The capitalized present value of marketing board quotas, for example, is larger than direct federal agricultural expenditures or tax expenditures, and the profits attributable to textile import quotas are almost as large as all regional development grants.[16]

Although most Canadian marketing boards do not employ the supply-management powers that give rise to quota values, producer-controlled marketing boards, many with wide powers to negotiate or fix prices of commodities they control, are now widespread in Canadian agriculture. In 1980, for example, there were 119 such boards, including twenty-three in Ontario (Sullivan 1981). Most marketing boards have come into existence in the last quarter-century, reflecting a transformation of government agricultural policy and a substantial increase in the degree to which self-interested parties are allowed to exercise control over the markets into which their produce flows (Green 1983). As economists since Adam Smith have never ceased to note – albeit with little visible impact on public policy to date – people in the same trade, whether they are doctors, automobile manufacturers and workers, farmers, or professors, seldom get together without ending 'in a conspiracy against the public, or . . . some contrivance to raise prices.' The implicit concern of

TABLE 9
Selected quotas as business subsidies ($ millions)

	Canada	Ontario	Quebec
Additional profits attributable to textile and clothing import quotas[a]	$ 124	$ 40	$ 79
Capitalized value of agricultural marketing board quotas[b]	2,043	720	662

a 1979 data.
b 1978 data.
SOURCES: For import quotas, Jenkins (1980), with the provincial distribution based on data in Pestieau (1978); for marketing board quotas, ECC (1981).

such producer groups is always to improve their own relative position, even at the expense of national output as a whole.

Entry restrictions – into highway trucking and the taxi business, for example – have effects similar to output quotas. Like marketing board quotas, route certificates and taxi medallions now have substantial value in many locales. Almost all occupational licensing schemes have similar effects in the form of increased incomes for the licensees.

All in all, quotas and entry restrictions are perhaps the most obviously undesirable forms of regulation in terms of their restrictive economic effects. It is curious that variants of such devices (such as exclusive procurement agreements) are frequently suggested as desirable policy instruments.[17] The main effect of such policies would be to create further privileged producer groups in the name of 'the public interest.'

The increasing attempts by governments in recent years to 'fine tune' the activities of the private sector by increasing the quality of investment and the benefits and costs of foreign trade are illustrated respectively by the Foreign Investment Review Agency (FIRA) and the Anti-Dumping Tribunal (ADT). Like procurement policies, these agencies may be viewed as subtle forms of government intervention reflecting such policy concerns as domestic employment policy, the 'new' nationalism, and the desire to offset declining tariffs as a result of the work of The General Agreement on Tariffs and Trade. Although the role of FIRA has diminished with the recent change in government (Beckman 1984), there is as yet no indication that any measures will be taken to reverse the apparently increasing tendency to use the ADT. More and more alleged cases of dumping have been investigated as the years go on, and the number of cases in which injury has been found and antidumping duties levied has also risen (Stegemann 1981). Again, it is far from clear that

more recourse to economic regulation of this sort inevitably – or even very often – serves the national interest.

CONCLUSION

The scattered statistics and references presented in this chapter are at best indicative. They do not indicate the degree to which these various forms of intervention actually impinge on firms and other economic agents. They reveal neither the stringency with which various rules are enforced nor the intensity with which policies are pursued. Moreover, some important aspects of government policy (such as labour legislation, which has directly or indirectly involved large scale intervention in the marketplace) have not been discussed at all. Despite these limitations, however, the evidence seems unequivocal that government intervention in markets in Canada is large and has been increasing in recent years.

Indeed, the evidence presented here is, if anything, more convincing than the better-known – if not always correctly interpreted – evidence on the growth of direct governmental activities as seen through the budgetary prism. Government is indeed big in Canada. But although it has grown significantly in some respects in recent years (transfer payments, total expenditures), it has hardly grown at all in others (employment, taxes). However, nonbudgetary government activities – regulation, loans and guarantees, and the public ownership in the business sector – show no similar signs of slowing down. Indeed, Trebilcock et al. (1982) suggest, not without cause, that times like the present – when people do not want 'more government' but do, it seems, want more government action – are likely to see an increasing turn to such less visible governing instruments.

The newest, least visible, and perhaps fastest growing instrument of government influence over private-sector activities is what Stanbury and Fulton (1984) call 'suasion', by which they mean a range of approaches from simple exhortation or 'jawboning' to murkier forms of pressure, with or without accompanying inducement and threat. Although the evidence on this sort of thing must obviously be fuzzy, at best, there seems little reason to doubt their conclusion that much use has been made of such intervention in recent years. Just as business has long lobbied government in many ways, so government now, in effect, lobbies business. The increased interdependence of the Canadian public and private sectors thus continues to develop on many levels. It is in the context of this changing reality that the question of an appropriate industrial policy for Ontario and for Canada must be considered.

NOTES

1 This argument is based on Webber and Wildavsky (1983), but it can obviously be linked to Olson's stress (1982) on institutional rigidities and to Cameron's emphasis (1978) on external vulnerability as a factor in explaining governmental expansion.

2 For some of these reasons, see Bird (1970; 1979a), and Bird, Bucovetsky, and Foot (1979). As noted in these works, the problem is not that we cannot explain the growth of government. It is rather that there are too many plausible explanations that cannot be refuted.

3 For more detailed discussions, see Bird (1970), Bird (1979a), and Howard and Stanbury (1984).

4 For the data supporting this statement and an explanation of rising taxpayer discontent that pivots in part on this phenomenon, see Bird (1982).

5 However, these activities are increasingly costly. Because they are, on the whole, labour-intensive (Bird, Bucovetsky, and Foot 1979), their efficient performance is likely to require over time a relatively larger share of real resources in an economy in which labour has become steadily more expensive in relative terms.

6 Of course, one might argue that many infrastructure facilities should be financed not from general revenues but from user charges and priced in an economically sensible way to ensure their proper use. (For an extensive argument along these lines, see Bird 1976.) But this has not, in the past, been the Canadian way, and there is no evidence that it will become so in the future.

7 This argument is developed further in Bird and Slack (1983, chap. 6).

8 For further development of this theme, see Bird (1976, chap. 15).

9 Kesselman (1983) and others suggest basing its finance on experience-rated premiums. We agree.

10 In the late 1970s, we even heard assertions that increases in public employment might crowd out private-sector activity by reducing the number of people available to work in the market sector, thus decreasing the overall rate of economic growth (Bacon and Eltis 1978; Eltis 1977). The persistent high levels of unemployment in recent years make such fears seem outdated.

11 From 1976 to 1980, for example, direct federal employment fell slightly, from 425,200 to 423,700; however, employment by federal, provincial, and some municipal enterprises rose by almost 15 per cent from 297,600 to 342,200 (Statistics Canada 72-004; 72-007; 72-009; 81-229; 83-201; 83-205; 83-232; Canadian Urban Transit Association 1981). It is also worth mentioning that there is little

evidence of any significant relative growth of the number of public employees regulating, controlling, and generally interfering with private business. Stanbury and Thompson (1980) note, however, that federal regulatory employment in Canada is relatively much larger than in the United States and that, although it grew a bit more slowly in the 1970s, the absolute number of regulators remained relatively much higher in Canada.

12 This estimate assumes that all education and health should be included in the public sector, as seems logical given Canadian methods of funding.

13 Some recent developments – 'flow-through shares', the Scientific Research Tax Credit introduced briefly in 1984, and so on – in effect extend the benefit of tax concessions even to nonprofitable firms by enabling them, in one way or another, to 'sell' the right to reduced taxes to firms that have profits and would otherwise have to pay taxes. Although such devices obviously cancel one of the supposed advantages of the tax-incentive approach, they may make sense if the overriding objective is more or less to exempt some favoured activity, such as R&D, from any real market test. Whether one should do this is, of course, quite another question.

14 For an argument that the larger role of public enterprises is an essential feature that distinguishes Canada's 'economic culture' from that of the United States, see Hardin (1974).

15 As *The Economist* recently said with respect to agricultural protectionism and subsidization: 'Lobbies for American and European farmers say they need to be subsidized so as to conquer hunger in the world. As is usual with lobbies, they tell the precise opposite of the truth' (2 February 1985, p.2).

16 In addition, Jenkins (1980) estimates that tariffs added another $143 million to the profits of textile and clothing firms in 1979. For further discussion of tariffs and quotas from a somewhat different perspective, see Green (1984, chap. 8).

17 In fact, we have recently acquired a variety of government procurement policies in which 'home' (including provincial) producers are favoured relative to 'foreign' (including extraprovincial) producers. These policies, along with other provincial barriers to trade, are examined in detail in Trebilcock et al. (1983).

3
Micro industrial policy

Do we not have in Canada a situation today where we have really a remarkable hodgepodge of assistance and stimulus by government for industry, tax incentives in some cases, export promotion and financing, patents, tariffs, import quotas, tax laws and regulations? The list is almost endless. Generally speaking, those initiatives are unrelated to each other, and tend to be on an ad hoc basis.

Roy McLaren, to the House of Commons
Standing Committee on Finance,
Trade and Economic Affairs, 1983

Industrial policy, as it has evolved in this ad hoc sectoral approach, has seen governments become ever more involved in attempting to alter natural economic forces by means of grants and various incentives.

The results have been widely recognized: a weak and vulnerable industrial structure, often characterized by high costs and frequent subsidization of the less efficient by the more efficient industries, and a general decline in international competitiveness in all sectors. Industrial policies have created at least as many problems as solutions, and all Canadians have paid heavily for them.

British Columbia, *Towards an Economic Strategy for Canada*, 1978

Parts of this chapter draw heavily on unpublished work by Paul Davenport and William Milne.

Against the broad outline sketched in Chapter 2 of the growth of government intervention in business in postwar Canada, the present chapter focuses on micro industrial policy in the sense of policy actions targeted at specific industries, firms, or inputs. The first and second parts of the chapter review federal industrial policies and how they have actually worked, while the third part does the same for Ontario. A principal conclusion is that not only do the policies pursued by government A often conflict with those pursued by governments B, C, and so on, but they also often conflict with other policies of government A itself. Such conflicts may be less important than they appear, however, since most of these policies probably have little effect.

Official circles are aware of these problems as the quotations heading this chapter suggest. Nevertheless, no government in Canada has been able to reconcile the competing cries for help of the various industrial and regional interests within its jurisdiction; the evidence for this conclusion is the failure on all sides to develop a coherent strategy or set of operational objectives for industrial assistance.

Another conclusion is that the case for assistance to a particular industry or firm is often most politically compelling when the prospective recipient has experienced a sudden decline in its competitive position. For example, the federal government found financial assistance to Chrysler and import quotas for the clothing industry appropriate responses to increasingly severe foreign competition during the 1970s. When competitive pressures thus threaten to reduce the size and profitability of a particular industry or firm, industrial policy can, in theory, be used either to impede economic adjustment or to facilitate it. In practice, most Canadian industrial policy has been aimed at protecting weak industries and firms from the need to adjust. This tradition doubtless helps to explain the persistence of policies supporting small business and the continued importance of regional policies at both levels of government (although other rationales for these policies exist).

Finally, it must never be forgotten that industrial policy initiatives are shared in Canada between two (sometimes three) levels of government. Thus, the practice of industrial policy is closely linked to the operation of Canadian federalism. The federal government is quite sensitive to the regional impact of its industrial initiatives, and provinces (and even cities) compete openly with one another to attract and stimulate industry within their borders. Sometimes the provinces and the federal government may agree on co-operative industrial policies based upon consistent principles. At other times, the federal government ignores provincial priorities in its industrial policy making, while the provinces act like independent countries, erecting barriers to inter-

provincial trade and attempting to counteract industrial expansion in other provinces.

Although the present chapter surveys only some aspects of this complex interaction among industrial policy, economic adjustment, and federalism, the account is sufficient to suggest that the Canadian system dooms industry- and firm-specific policies to failure. In two earlier reviews of federal-provincial relations as they affect industrial policy, Tupper (1982) and Thorburn (1984) reach quite different conclusions on this point. Thorburn argues that what is needed to make Canadian industrial strategy workable is a joint federal-provincial economic development commission to do the co-ordinating job,[1] rather like the commission Robinson (1980) recommended a few years earlier to deal with economic policy co-ordination problems in general. Although such a proposal certainly has some merit – see the extensive discussion in Bird (1985) of federal/provincial policy in general – on the whole it is difficult for anyone familiar with Canadian federalism not to agree with Albert Breton's response to Robinson's similar scheme: 'Almost from page one, I discovered I was out of sympathy with the framework it uses and the approach it espouses' (Bird 1980a, 83).

In contrast, Tupper's position, that 'there are no obvious constitutional or political solutions to the problems posed by government's reliance on industrial assistance policies' (1982, 18), seems more persuasive. In Canada today, as Tupper goes on to note, 'debates about industrial strategy are shaped by a complex influence of international constraints, political posturing, competing corporate interests, and the often conflicting goals of eleven interventionist governments' (1982, 99). Nothing seems likely to change this situation soon. A similar conclusion emerges from the recent careful reviews of Canadian and international experience by George (1983) and Palda (1984). The more closely one looks at the matter, the better the relatively noninterventionist policy of Ontario looks.

FEDERAL INDUSTRIAL ASSISTANCE PROGRAMS

The overall direction of federal industrial policy over the last decade appears to be explained best in terms of political responses to business appeals for assistance.[2] A government that intervenes almost entirely at the request of the private sector is, however, in a curious position. If its criteria for financial aid to industry are identical to those of the private sector, why is its intervention needed? Firms that require funds, either for expansion or to ward off bankruptcy, can presumably seek loans from established private-sector institutions, which can evaluate credit-worthiness more professionally than government. Thus, the very existence of

public assistance programs for private firms implies that the government must have criteria different from those of the private sector for evaluating economic performance. Such criteria should be explicit. For business firms, for instance, explicit criteria represent vital planning information. For the government departments administering the assistance programs, explicit criteria are essential both for the proper management of the funds involved and to ensure some degree of consistency among programs. Finally, for Parliament and the public, only explicit criteria for granting assistance can permit informed debate about the merits of the various programs and the priority to be given to industrial assistance as compared to competing areas of budgetary expenditure.

At present, none of these goals can be attained in Canada because the criteria for assistance are not explicit. And, as the following examination of federal industrial assistance suggests, no coherent set of criteria exists.

Direct subsidies

The importance of federal industrial assistance, especially discretionary assistance, is illustrated for the fiscal year 1981/2 in Table 10. (The details change from year to year, but the general picture remains the same.) In total, budgetary expenditures in that year were $68.0 billion; an additional $1.4 billion in loans, investments, and advances resulted in a total outlay of $69.4 billion. The spending of the ten departments shown separately in the table is most directly related to discretionary economic policy. The subtotal line shows that more than 60 per cent of the total budgetary expenditure of these ten 'economic' departments consisted of transfers – grants and contributions. Only 12 per cent of such expenditures were statutory. In other words, most federal industrial assistance took the form of annual, discretionary transfers.

In fact, this assistance was centred in large, nonstatutory transfer programs of four departments: Agriculture; Energy, Mines and Resources; Industry, Trade and Commerce (IT&C); and Regional Economic Expansion (DREE). Table 11 details five major industrial assistance programs that dealt with firms on an individual basis and in total dispensed more than $1 billion in grants, loans, and loan guarantees in 1981/2; four of them were from IT&C – two from its Enterprise Development Program (EDP) – and the fifth from DREE. (Although the names of some of these departments and programs have changed since, their activities remain much as described here.)[3]

EDP loans, geared to manufacturing and processing firms in difficulty, were spread widely over the economy in 1981/2, as in most years. EDP grants, on the other hand, were concentrated in such industries as

TABLE 10
Federal government spending by department, 1981/2 ($ millions)

	'Economic' spending: % of total outlays[a]	Budgetary expenditure	Statutory expenditures		Grants and contributions	
			Amount	Share of total	Amount	Share of total
Agriculture	100%	$1,125	$274	24%	$690	61%
Consumer and Corporate Affairs	100	95	9	9	2	2
Economic Development	100	13	1	8	0	04
Energy, Mines and Resources[b]	100	4,453	273	6	3,868	87
Fisheries and Oceans	100	441	25	6	27	6
Industry, Trade and Commerce	100	990	174	18	618	62
Labour	94	71	25	35	13	18
Regional Economic Expansion	100	745	8	1	514	69
Science and Technology	100	486	15	3	254	52
Transport	100	2,280	484	21	626	27
Subtotal	100	10,699	1,288	12	6,612	62
21 other departments		60,314	41,369	69	29,149	38
Petroleum Compensation Revolving Fund	100	−3,055	−3,055	100	737	19[d]
Total	12	67,958	39,602	58	36,498	54

a 'Economic' spending includes the envelopes of economic development ($6,899 million) and energy ($1,608 million). Outlays include the budgetary expenditures plus $1,439 million for loans, investments, and advances.
b The Energy, Mines and Resources line omits that department's Petroleum Compensation Revolving Fund which is shown separately below. The negative figure for budgetary expenditure in the PCRF line indicates a surplus: receipts ($3,792 million) exceeded compensation paid ($737 million) by $3,055 million.
c Economic expenditures were $211 million, or 0.3% of total outlays.
d This figure represents total grants as a percentage of total PCRF receipts; see also note *b*.
SOURCE: Canada, (1983a, 1: tables 4.2, 6.2, 6.5; 2: sec. 6, p. 10).

TABLE 11

Financial assistance to firms, by region: five major federal programs, 1981/2 ($ millions)

Program[a]	Atlantic provinces	Quebec	Ontario	West	Total[b]
EDP-loan guarantees					
Number of projects	14	29	66	31	140
Amount	$2.5	$25.1	$99.3	$4.8	$131.7
EDP-innovation					
Number of	26	306	135	109	576
Amount	$2.0	$35.3	$62.7	$19.2	$119.2
DIPP					
Number	2	69	110	8	189
Amount	$0.07	$93.6	$57.6	$3.7	$154.9
Subtotal, 3 programs					
Number	42	404	311	148	905
Amount	$4.6	$154.0	$219.6	$27.7	$405.8
%	1.1%	37.9%	54.1%	6.8%	100.0%
Small business loans					
Number	825	5,379	3,256	7,124	16,584
Amount	$23.2	$147.9	$105.0	$213.5[c]	$489.6
%	4.7%	30.2%	21.4%	43.6%	100.0%
RDIP					
Amount	$18.6	$74.7	$11.7	$21.7	$126.7
%	14.7%	59.0%	9.2%	19.1%	100.0%

Table 11 (continued)

Program[a]	Atlantic Provinces	Quebec	Ontario	West	Total[b]
Total, 5 programs					
Amount	$46.4	$376.6	$336.3	$262.9	$1,022.1
%	4.5%	36.8%	32.9%	25.7%	100.0%
Per capita	$20	$59	$39	$38	$42
Per $1,000 manufacturing output	$16	$20	$10	$20	$15
Regional size[d]					
Population (% of total)	9.4%	26.3%	35.8%	28.5%	100.0%
Manufacturing (% of total)	4.3%	27.4%	49.7%	18.7%	100.0%

a The complete program names are: Enterprise Development Program (EDP), Adjustment Assistance Loan Guarantees; EDP, Innovation and Product Development Projects; Defence Industry Productivity Programs (DIPP); Small Business Loans Program; Regional Development Incentives Program (RDIP). RDIP was in the Department of Regional Economic Expansion; the other four programs were in the Department of Industry, Trade and Commerce.

b All totals exclude the Northwest Territories and the Yukon, which received $2.3 million in small business loans and $0.3 million from RDIP.

c Manitoba and Saskatchewan received $43.8 million in small business loans (8.9% of the total) and $20.7 million from RDIP (16.3% of the total). These two provinces had 8.3% of Canada's population in 1981 and 3.9% of value added in manufacturing in 1980.

d Population as of 1 June 1981; manufacturing percentages are the distribution of value added in 1980.

SOURCE: Canada (1982b, tbls 1-4; 1982c, 44).

machinery, electronics, and automobiles, while the grants of the Defence Industry Productivity Program (DIPP), designed to support Canada's participation in defence production sharing agreements with the United States, went mainly to high-technology firms in the defence industries. The focus of both the EDP and the DIPP grant programs on technology and innovation presumably reduces access to this assistance by such industries as clothing, knitting, textiles, leather, footwear, and wood. These industries seem to be well represented, however, in the less important Regional Development Incentives Program, which, owing to its regional orientation, is less concerned with productivity and comparative advantage.

The only program of the five not restricted to manufacturing and processing was the largest. Small-business loans appear to offer something for every kind of firm. In 1980 in Ontario, for example, the Economic Council of Canada (1982) reports that 33.6 per cent of these loans went to services, 30.1 per cent to trades, 21.3 per cent to manufacturing, 9.1 per cent to construction, and 5.9 per cent to transportation and communications. The wide dispersion of these loans makes the effects of the program especially difficult to evaluate.

The quite different orientations of the five programs shows up clearly in the regional distribution of the grants. RDIP assistance is concentrated in the Atlantic provinces and Quebec, which together received 74 per cent of the funds in 1981/2, about double their share of population and of manufacturing output. Ontario, which received only 9 per cent of RDIP expenditures, got 54 per cent of the EDP and DIPP funds – more than its share by any manufacturing measure, let along one related to population. The west received a particularly high share of the small business loans. Overall, although Quebec led the country in per capita assistance and Ontario was far behind in assistance per $1,000 of manufacturing value added, the regional distribution of total assistance under the five programs was more even than one might expect; the different regional biases of the various programs tended to cancel each other out.

A recent ECC study (Binhammer, McDonough, and Lepore 1983) similarly finds that most federal grants to firms go to Ontario and Quebec (which, of course, have most of Canada's industry), with proportionately more going to Quebec. The programs oriented to research and development channel most funds to high-tech industries, such as electrical and electronics, while the regional programs direct most of theirs to consumer products and textiles. By industrial sector in the early 1970s, federal grants to industry were distributed 21.5 per cent to transportation, 20.1 per cent to consumer products and textiles, 18.1 per

cent to electrical products and electronics, and 17.6 percent to resources and construction.[4]

In 1983, the EDP and several other programs were replaced by the Industrial and Regional Development Program (IRDP) under the newly formed Department of Regional Industrial Expansion (DRIE). Under this new program, assistance (through grants, loans, guarantees, and so on) can be varied from 50 per cent to 75 per cent of the total cost of a project, with the government share depending primarily on the unemployment rate and the income level in the relevant census division. In 1983/4, IRDP received a budget of $103 million to create jobs in slow-growth regions and to promote technology development. As the Wright Task Force report notes, however:

> Encouraging economic development in slow-growth regions is one thing. Encouraging the development of technology is quite another. The goals of regional development and technology development are parallel, but not always complementary. Trying to serve both goals within a single program, namely IRDP, has created a frustrating situation in which neither goal is adequately served. (Canada 1984b, 9)

Given its orientation towards R&D, the task force report was particularly critical of IRDP. It found two smaller programs administered through the National Research Council – the Industrial Research Assistance Program (IRAP, which was budgeted $48 million in 1983/4) and the Program for Industry then Laboratory Projects (PILP, which was budgeted $24 million in 1983/4) – to be much more effective in encouraging technology development.[5] Of course, as Longo notes:

> The fact that most of the recipients of government technology subsidies prefer the way that the NRC gives out grants to the way that DRIE does it does not mean that DRIE is not doing as good a job. These programs are, and should be, designed to serve the public interest, and not merely the interests of the firms that use them. (1985)

The effectiveness of firm-specific programs

Firm-specific programs, such as those discussed above, involve a fairly costly administrative process: firms must apply for the funds; the applications must be reviewed by departmental officials; for those applications accepted, specific terms must be agreed upon. Yet, as we saw in Tables 5 and 6, these costly grants have expanded very rapidly over the past decade. Why? One obvious reason is political visibility. Announce-

ments of grants to specific firms usually bring media recognition both to the government in general and to specific members of Parliament, a form of publicity that is presumably impressive to the voters who will benefit from the grant.

A second explanation for subsidies to particular firms is what might be called the 'bang-per-buck' theory. By operating on the margin of investment decisions, a firm-specific subsidy program can, in principle, have a greater impact on investment and/or employment per dollar of government expenditure than would a similar expenditure available to all firms (Binhammer, McDonough, and Lepore 1983). The problem, however, is to distinguish operationally between job or investment creation, and job or investment substitution. The employment and investment associated with a grant to a firm can be deemed incremental only if the particular firm would not have undertaken the expansion without the grant *and* if no other firm reduced its employment because of the grant (ECC 1977, 173-6). Both conditions are very difficult to evaluate in practice.

Two early studies of the first condition differ widely in their findings. Springate (1973) concludes that only about 30 per cent of DREE subsidies to large businesses and 46 per cent of those to small businesses actually induced firms to undertake investments they would not otherwise have made. An almost contemporaneous Atlantic Provinces Economic Council (cited in Usher 1975), on the other hand, finds that 80 per cent of the DREE subsidies it studied were essential to the investment projects being funded.

More recently, Usher (1983) analysed the potential 'bang per buck' from firm-specific grants, finding that it is very difficult to demonstrate that a given subsidy is essential to a particular project by a firm and next to impossible to demonstrate that it does not drive out investment and employment in other firms. His analysis leaves the strong impression that most of the potential advantages of marginal grants are probably illusory. Granting agencies are simply not in a position to know which is the marginal firm or how much subsidy it requires or the impact of the subsidy on its competitors. Far too often such subsidies may expand inefficient firms at the expense of efficient ones, with no net increase in employment or investment. Given this finding and the high administrative cost of firm-specific grants, Usher's study provides a strong argument for rethinking the desirability of these assistance programs in Canada.

The ECC (1983) also recently reviewed several federal industrial assistance programs, including the EDP. Table 12 gives a breakdown of the 'innovative' projects approved under that program in 1980/1 and 1981/2. About one-third of the $217 million authorized went to just

TABLE 12
Projects approved by the Enterprise Development Program for innovation assistance, by firm size, 1980/1 and 1981/2

Firm sales	Amount authorized[a] ($000)	Number of projects	Average authorization per project ($000)
Less than $5 million	$97,309	995	$98
$5 million to $25 million	48,278	92	525
More than $25 million	71,773	38	1,889
Two-year Total	217,358	1,125	193

a Authorizations for each category for 1981/2 were reduced by 4% to be consistent with total in source.
SOURCE: ECC (1983, table A-5).

thirty-eight firms with sales of more than $25 million; the average amount of assistance in this category was $1.9 million. It is far from clear why firms of this size, which presumably have access to ordinary capital markets, receive such grants at all. Were all the favoured thirty-eight judged to be about to develop path-breaking inventions with large external benefits that would not otherwise be financed? If so, it would be interesting to know how many of the inventions were actually successful. Unfortunately, this sort of question never seems to be asked, let alone answered. As Palda says, 'The fact remains . . . that no comprehensive critical appraisal, based on numerical analysis, of Canada's central government's outlays on and benefits from technology exists' (1984, 168).

At the other end of the spectrum, grants averaging just $100,000 were offered to not quite a thousand firms with sales of less than $5 million. Firms of this size do frequently encounter problems in ordinary capital markets, often for the good reason that their prospects are extremely difficult to evaluate. Again, one wonders what special criteria or expertise officials are able to apply that make these grants superior to a general tax cut for small business.

The industrial distribution of the same EDP grants, which represented almost half (48 per cent) of the estimated total cost of the projects assisted, is set out in Table 13. Three industries – electrical products, machinery, and ground transportation equipment – received 80 per cent of the assistance authorized, although they accounted for only 22 per cent of value added in manufacturing. Relative to the other twenty-one manufacturing industries listed in the table, the three favoured ones were higher than average both in output per person employed and in R&D as a proportion of sales (ECC, 1983, 10, 42, 111). By an interesting coin-

TABLE 13
Projects approved by the Enterprise Development Program, by industry, 1980/1 and 1981/2

	Amount authorized ($000)	Number of projects	Average authorization per project ($000)
Electrical products	$82,146	262	$314
Machinery	49,261	226	218
Transportation equipment other than aircraft	42,722	62	689
Food and beverages	5,764	50	115
Chemical products other than drugs and medicines	5,676	28	203
Metal fabricating	4,824	68	71
Scientific instruments	4,821	18	268
Rubber and plastics	3,244	42	77
Mineral products	2,447	19	129
Furniture	1,782	63	28
Clothing	1,506	60	25
Wood	1,385	34	41
Gas and oil wells	1,070	1	1,070
Drugs and medicines	994	7	142
Footwear	730	23	32
Textiles	661	20	33
Primary metals	604	10	60
Aircraft and parts	550	7	79
Paper	541	10	54
Petroleum products	5,938	109	54
Other manufacturing	507	4	127
Two-year total	$217,358	1,125	193

SOURCE: ECC (1983, table A-3).

cidence, these three industries are also those identified most prominently in a recent Science Council study on backing winners in R&D-intensive manufacturing (Stead 1982, 50, 51). If simply promoting R&D is the goal, tax incentives – already extremely generous for this purpose in Canada (McFetridge and Warda, 1983) – seem a more appropriate vehicle. Of course, in principle, firm-specific grants could permit EDP officials to fund only projects with large external benefits that the private sector alone would not fund. Unfortunately, the ECC study finds 'no evidence that the subject of inappropriable social benefits received conscious attention at any stage in the decision-making process' (1983, 163).

In light of such findings, it can only be described as surprising that the ECC itself has urged that innovation and R&D subsidies be paid when: (1)

the projects are 'worthwhile to the country'; (2) 'the projects would not provide a reasonable profit' without the subsidies; (3) the 'subsidized projects are incremental not only to the firm but also to the industry to which the firm belongs'; and (4) 'the incrementality of the jobs created' has been evaluated (1983, 84-5). Since the Council does not provide even the slightest indication of how these extraordinarily difficult judgements would be made or of the characteristics of the remarkable people who would make them, it is difficult to take these recommendations seriously. To restate Watson (1984) in a related context, 'One might just as well recommend that civil servants be taught to fly.'

Financial assistance

In addition to running its own direct-assistance programs, the federal government is increasingly using Crown corporations to offer loans, loan guarantees, and insurance to private firms. One of the three largest such corporations is the Farm Credit Corporation, which has traditionally financed a large share of the total long-term debt of Canadian agriculture – about 50 per cent in 1961, 65 per cent in 1971, and 45 per cent in 1980, according to a recent ECC (1982) review of government credit agencies.

Another big federal lending agency, the Export Development Corporation, in 1980 provided loans financing 1.2 per cent of Canada's exports, as well as insurance on 3.5 per cent of them. EDC loans and insurance were particularly important for exports to Latin America, the Middle East, and Africa. Although such aid has long been a favourite theme of Canadian policy, experts (for example, Raynauld 1983) generally conclude that these extensive subsidies – said to be twice as great as those in other industrialized countries – have been of little use and, indeed, have probably distorted Canada's economy undesirably.[6]

The newest (1974) and smallest ($2.0 billion in 1980) of the three big credit agencies, the Federal Business Development Bank, lends money to small business in all sectors of the economy. The ECC study (1982) says, for example, that more than half the FBDB loans to Ontario in 1979, for example, were in the service sector, including trade (24.7 per cent of all loans), tourism (18.4 per cent), and other services (15.6 per cent); others went to firms in manufacturing (31.8 per cent), construction (4.7 per cent), agriculture (4.3 per cent), and other primary industries (0.5 per cent).

Overall, the ECC study (1982) reports it is often difficult to determine the goals of government credit agencies, much less the relation between these goals and policies. In general, however, it appears that the agencies were not concerned so much with what the Council calls the 'correc-

tive' role of overcoming specific market imperfections as with 'promoting the restructuring of industry and fostering economic and social development' (1982, 5). It is not clear how it is possible to 'restructure industry' by loaning money at subsidized rates to *all* sectors of the economy. Moreover, for all these credit programs, as for the industrial assistance grants reviewed above, the failure to establish clear operational priorities and objectives makes any serious evaluation of their success extremely difficult.

Bailouts

No review of recent federal industrial policy would be complete without mention of the celebrated bailouts – ad hoc assistance plans for highly visible firms that have occurred during the past decade. As of 1983, of sixteen such operations in which the federal government offered more than $3 billion in loan guarantees and other assistance,[7] six had resulted in heavy losses for the government, two were success stories in which the government was fully repaid (Pioneer Chain Saw and Electrohome) and the jury was still out on the remaining eight (Solomon 1983). It is difficult to imagine any coherent set of economic or social objectives that could explain why these particular firms, among the thousands teetering on the edge of bankruptcy during the last decade, were singled out for such extreme government generosity. Perhaps the principle is simply that big firms are more likely to be bailed out than small ones.

Such bailouts provide a particularly striking example of the lack of coherency and consistency in federal industrial assistance policy. Too often it seems, as Palda says:

> The picking of winners that turn into lame ducks or the rescue of lame ducks on the grounds that their high technological content will turn them into winners with one, definitely the last, extra infusion of taxpayer money is a theme that permeates much of the federal industrial activity being actually carried out. (1984, 114)

THE QUEST FOR COHERENCE IN FEDERAL POLICY

The central feature of the federal industrial policies considered above – and the list could be extended considerably (see, for instance, Davenport et al., 1982, App. C) – is that they are inherently selective in their support: some industries and firms benefit, while others are disadvantaged. It is this selectivity that makes a coherent set of industrial policies peculiarly difficult to effect in a democratic, federal society. How are the

beneficiaries to be chosen? How can those who do not benefit be persuaded that the policies are in their best long-term interests? If the policies chosen imply the decline of certain regions or industries, is it possible to compensate the losers so that they will willingly accept the policies? From the federal government's perspective, these questions can be posed with respect to provincial governments, as well as business and labour. If the federal government is to design and implement a consistent set of industrial policies, it must be capable of compensating – or withstanding the criticism of – those who feel harmed (or inadequately favoured) by the direction of industrial strategy.

In fact, the federal government has not been able to formulate a coherent framework for industrial policy – and probably cannot do so – simply because it has been unable to reconcile Canada's conflicting regional, industrial, and social interests. In practice, government has, therefore, settled for the socially costly, if politically advantageous scattergun approach – a myriad of industrial- and regional- support programs, with something for everyone. One result of this approach is that it is impossible to give any precise account of the overall impact of the various policies.

Indeed, all these costly industrial policies may have little net impact at all: R&D support in industry A may be roughly equivalent to export subsidies in industry B to enterprise development grants in industry C to regional-development grants in industry D. The various policies may thus, in total, approximate a tax cut, but one that is expensive (because so much effort is involved in applying for and distributing the funds) and nonneutral (because even if each industry and region receives roughly proportionate amounts, some of the subsidies fund R&D, some exports, and some whatever the granting agency defines as enterprise or regional development).

Attempts to make policies coherent

If the federal government has failed to set out its industrial policies in a coherent fashion, it has not been for lack of trying. On the contrary, during the past decade the government has made several attempts to achieve some degree of coherence in its industrial policies as part of a broader effort to impose order on government economic policy generally (Phidd and Doern 1978; French 1980).[8]

The search for sectoral strategies

In 1972, for example, Minister of Industry, Trade, and Commerce Jean-Luc Pépin announced that his department was committed to producing an 'industrial strategy', defined as:

> The proper planning by [the federal] government for the optimum coordination of policies and decisions, on the use of all productive resources, in order to achieve defined (and accepted) social and economic goals. The strategy must embrace all sectors of economic activity from resources to services, but must emphasize manufacturing and processing. (Quoted in Phidd and Doern 1978, 304.)

Subsequent IT&C ministers abandoned the bold term 'industrial strategy', probably wisely, and preferred to consider policy on an industry-by-industry basis, which may not have been so wise. 'Sector strategies' fit well with the delivery system of the department, which consisted of a number of line branches, each dealing with a given industrial sector (French 1980). Such an approach to policy, however, produces no framework for evaluating the priority to be given to different sectors. Neither does it enforce any kind of consistency in objectives and policies. It is thus impossible to tell whether particular sectoral policies contribute to economic efficiency, growth, or any other government objective. In practice, IT&C policies were all too likely to degenerate into efforts to give the businesses in each sector whatever they claimed they needed, with the line branches competing for department resources for their 'clients' (Stigler 1971; Wolf 1979).

The supreme effort by IT&C to produce a set of sectoral strategies was undertaken in 1977 and 1978 (Brown and Eastman 1981). The operation began with an opinion survey of some 5,000 industrial firms in Canada designed to elicit their concerns about industrial policy, regulation, and assistance. With the results in hand, the government then established twenty-three task forces to review industrial policy in the various manufacturing industries, as well as in construction and tourism. The committees included representatives of business, labour, academia, and the provincial and federal governments, with numerical emphasis on the first. The twenty-three resulting reports were condensed into a single document by what was called the Second Tier Committee.

If the purpose of this elaborate exercise was to evaluate options and set priorities, it clearly failed. The report of the Second Tier Committee (Canada 1978) is, for the most part, simply a listing of all the various kinds of government assistance that each industry would like to receive. All industries are apparently worthy of assistance: competitive industries, because they are strong and expanding; uncompetitive industries, because they are not. The report includes no discussion of the need for reducing the size of clearly uncompetitive industries or of any means of easing transitional problems. As Brown and Eastman point out:

> If the federal government had wanted recommendations on which to base an industrial strategy, it would have had to clarify its objectives and ask the private sector about ways to achieve them. . . . A bottom-up process, in which the private sector is simply invited to 'tell us what you want,' is bound to produce an uncoordinated and incoherent stream of proposals which provide something for everyone, but avoid hard decisions. (1981, 176)

Much the same issue was raised in a discussion of the twenty-three task-force reports at a two-day seminar sponsored by the Conference Board of Canada in June 1978. A revealing exchange took place between Gordon Osbaldeston, then deputy minister of Industry, Trade, and Commerce, and Grant Reuber, then chairman of the Ontario Economic Council:

> REUBER: I suppose the crunch will come when, having gone through one or two group cases, you come into a policy area where you have to say which of these industries you are going to allow to go down the tube. Does your process contemplate that?
>
> OSBALDESTON: I feel it unlikely that we will get that recommendation from any of them.
>
> REUBER: But if you don't get such recommendations, it is not worth it.
>
> OSBALDESTON: Well, we won't. It's not realistic. . . .I am not, and neither are you, so naive as to think that economic analysis is going to override political and social realities and, therefore, we might say that the groups have already rejected such a proposition. But short of the government coming forward – and that is the difficulty of coming forward with industrial strategy because you can't get consensus – there are things short of identifying those who must go down the tube. You have to make policies to alleviate what is inevitably going to happen while you don't want to put policies in place which extend the death throes unbearably. (Dodge 1978: 84-5)

Reuber's unassailable point, that an essential part of any industrial policy is identifying the sectors expected to contract, thus remained unanswered. Yet any sensible framework for industrial policy requires a distinction between competitive industries experiencing temporary difficulties and uncompetitive industries experiencing secular decline. The practical and political difficulties of making these difficult judgements remain the greatest (indeed, probably insuperable) obstacle to a consistent approach to industrial policy at any level – federal or provincial.[9]

A flurry of other reports at the end of the 1970s emphasized the importance for Canada's development of the major energy projects then in vogue. For example, the joint federal-provincial meeting that considered the report of the Second Tier Committee in 1978 set up a business-labour task force 'to consider the industrial and regional benefits from major Canadian projects' (Federal-Provincial Conference 1978, 4). The subsequent report of this task force (Canada 1981b) contained a series of policy recommendations generally consistent with the traditional stress of the policy-review process on the importance of manufacturing: their goal was to maximize the benefits of megaprojects by manufacturing in Canada as many of the inputs as possible. One way to achieve this end, it noted, was to extend procurement preferences to Canadian firms, particularly smaller ones (Canada 1981b). A major federal policy statement issued later the same year picked up the same themes, similarly emphasizing the need to obtain as much manufacturing and technological development as possible in the course of developing natural resources (Canada 1981a). The Office of Industrial Regional Benefits was set up to co-ordinate federal activities related to these projects and to identify opportunities for such development. Additional independent emphasis was put on technological development as six new microelectronic centres were scattered, in characteristic Canadian fashion, across the country. New funds were also made available for other high-tech purposes such as videotex applications (Canada 1981a).

As resource megaprojects lost much of their glamour in the early 1980s, high-tech industry received even more emphasis, perhaps most notably in the report of the Wright Task Force, which also stressed the use of federal procurement to aid technological development (Canada 1984b). The somewhat aberrant emphasis in the 1981 federal policy statement on riding the natural resources boom to technological and manufacturing development was thus replaced, as commodity markets turned down, by a return to such tried-and-true paths as direct emphasis on fostering technology and manufacturing.

The general situation of federal industrial policy at the end of all these twists and turns is well captured by two newspaper headlines from 1983 at the end of the Trudeau era: 'Industrial Strategy Dead, Lumley Says' (*Globe and Mail* 30 March 1983, p. 1) and 'Industrial Strategy Still Alive: Lumley' (*Toronto Star*, 29 April 1983, p. B8). Edward Lumley was then the cabinet minister in charge of 'industrial strategy' – dead or alive.

The effects of existing policies

According to Diebold (1982), the traditional concerns of industrial policy in Canada have included:

- International competiveness.
- Developing manufacturing rather than primary industries.
- Foreign investment and ownership.
- Regional equilibrium.

To this list, one might add as independent factors, particularly in recent years, two additional concerns:

- Small business.
- Technology.

An internationally competitive, Canadian-owned, small or medium-size firm engaged in high-technology manufacturing and located in a poor region would probably be eligible for almost every grant, tax concession, loan subsidy, and protective measure available!

Unfortunately, most such measures do little to assist such firms to be internationally competitive in any economically worthwhile sense – remembering, as Raynauld (1983) emphasizes, that it is not worthwhile to compete with others to see who can give away the most to third parties. Moreover, firms given an undistorted choice seldom locate in poor regions (unless such regions have an exceptional knowledge base). At the very least, then, the regional and the industrial concerns of policy tend to be at cross-purposes.

Finally, despite the constant repetition of various arguments for official favouritism to (1) small (2) Canadian (3) high-tech (4) manufacturing as the solution to Canada's problems of growth, employment, and cultural identity, there is simply no credible evidence that government policies that bias decisions in favour of firms possessing any or all of these characteristics make any sense. The chanting of these characteristics as desirable owes more to faith than to any scientifically respectable evidence that good things will flow from concessions to those possessing them.[10]

If resources are scarce – which, after all, is the basic premise of economics (and, to a large extent, of politics) – and there is no sound case for turning private choices in such directions, the result of such biases must inevitably be less to go around. The favoured firms, sectors, and regions may (or may not) be better off as a result of such industrial policies, but the rest of us are clearly worse off. As a recent critical review of Alberta's industrial strategy proposals says in a provincial context:

> Adopting a provincial diversification strategy in response to protectionist moves by other provinces does *not* raise Alberta incomes; it only serves to further lower them. It is the residents of Alberta who ultimately will bear the cost of a less efficient distribution of capital, labour and resources in the province that would result from adoption of investment strategies on the part of the provincial government. . . .The best strategy of all is to live well. We would suggest that the provincial government opt for the approach that increases the income of Albertans and leads to greater productivity of the resources available in the provincial economy. (McMillan, Percy, and Wilson 1984, 56)

Exactly the same can be said about Canada as a whole.[11]

In a critical review of the events sketched earlier in this section, Jenkin (1983) notes that Canada's governmental structure and regional diversity have made it almost impossible to build any coherent national industrial strategy. What is much less clear is whether the interventionist role that he and many others would prefer government to take is either sensible or, in the Canadian context, workable.

INDUSTRIAL POLICIES IN ONTARIO

An Ontario government reviewer of the Jenkin book notes that criticism of Ontario for not having an 'industrial plan' completely misses the point since 'the essence of government's role, in the view of the government of Ontario, is to support private sector initiative' (Barrows 1984). How accurate a picture is this of industrial policy in Ontario?

Although the relatively noninterventionist Ontario government has been very active in the industrial-policy field in recent years, Ontario is by no means the major player in this game, even within its own boundaries. Trebilcock et al. (1983, 311) report, for example, that in total in 1978-9, federal and provincial investments, loans, and loan guarantees amounted to $47.6 billion ($22.1 in loans and investments, $25.5 in guarantees), of which only $11.0 billion were provincial ($10.0 billion in loans or investments) and only $1.6 billion (almost all loans and investments) in Ontario. As Davenport et al. (1982) also stress, other provinces are much more active than Ontario in subsidizing business – in particular, Quebec did so to the tune of $4.3 billion in 1978-9, for example. An admittedly incomplete list of provincial subsidy and incentive programs in Trebilcock et al. (1983) runs to twenty-eight pages. Although much of this space is occupied by long lists of agricultural incentives, a significant number of incentives to industry not very dissimilar in range and type to those of Ontario discussed below is evident in every province. The study suggests, nonetheless, that all

these subsidies may not have a large net cost to Canadians in terms of capital-market distortions. Bird (1984b) argues, on theoretical grounds, that even if these policies are costly, there is little reason to be concerned for the future of the federal system as most provincial incentive policies either offset each other or else represent perfectly legitimate expressions of local preferences.

What should cause more concern is the strong evidence that most such incentives serve no useful *economic* purpose, especially in small, open provincial economies (Hartle et al., 1983). As Bird (1980b) suggests with respect to investment incentives in general and as seems self-evident from the repeated and widespread obeisance paid in Canada to the alleged manifold virtues of small business, manufacturing, and research and development, most provincial government subsidies to business probably represent responses to political rather than economic imperatives. That is, they amount to little more than either benefactions to politically significant groups or politically useful signals that governments are responding to perceived problems.

Indeed, it is impossible to review the lengthy history of government subsidies in Canada without concluding that what matters most is political appearance, not economic reality. The simple fact that no decent official studies have ever been released in Canada of the effects of such measures is sufficient proof of this assertion.

Ontario, like other provinces, has utilized a wide range of industrial policy instruments over the years. Only some highlights from the lengthy list are discussed here.

Direct progress of aid to business

Perhaps the first agency set up to aid business in Ontario was the Ontario Research Foundation (ORF). Its objectives, as stated in The Research Foundation Act of 1928, are:

> (a) The improvement and development of manufacturing and other industries by the introduction of advanced methods and processes;
>
> (b) The discovery and better development of the natural resources of the Province and the discovery and utilization of the by-products of any processes in treating or otherwise dealing with the mineral, timber and other resources of the Province.

This agency continues to be alive and well today, as, of course, is its objective of promoting technological innovation In 1982, for example,

Ontario channelled $4.8 million through ORF to serve some 2,100 industrial clients, half of them small businesses, in a variety of ways.

The next separate organization, established twenty-five years later in 1963, took a quite different tack. The Ontario Development Agency (ODA) was formed to aid business, particularly small business, by providing loan guarantees and consulting services. Its ambitious objectives were to help replace imports and to promote regional growth through the decentralization of industry. Its financial activities were severely limited, however (it could not, for example, provide loans itself), and it was also criticized as not providing enough consulting services. Partly for these reasons, it was replaced by the Ontario Development Corporation (ODC) in 1966.

The ODC was established as a Crown corporation of the Ontario government with the stated objective 'to encourage and assist in the development and diversification of industry in Ontario' and it continues to operate today. It took over the ODA's programs of providing technical, business, and financial information to firms and of making laon guarantees. But unlike its predecessor, the ODC can also provide financial assistance through the purchase of shares and by making incentive (performance) loans or term loans. Incentive loans are repayable interest-free or at reduced rates; the commencement of repayment can be deferred, and in some instances (such as the firm's performing well), the loan can even be partially forgiven. Term loans are more conventional, with repayment terms fitted to the circumstances of the borrower at current interest rates; these loans are intended for businesses located where financing is not readily available from regular lending institutions.

After the ODC was operating, the province put in place two additional, similar development corporations – the Northern Ontario Development Corporation (NODC) in 1971 and the Eastern Ontario Development Corporation (EODC) in 1973. Their establishment reflected the growing provincial emphasis on regional development to match (and, to some extent, offset) the growing federal regional role (Careless 1980).

As shown in Table 14, the activities of these development corporations grew substantially in the early 1970s. After 1975, the funds flowing through these corporations decreased significantly (even in nominal terms), but they have continued to play an important role in Ontario's industrial policy. Since 1979, they have placed greater emphasis on small business and encouraged private financing in concert with government financing. Their assistance programs are aimed at small and medium-size manufacturing firms and tourism operations – especially those that are Canadian-owned. Although the number of loans has

TABLE 14
Spending of the Ontario development corporations, 1971/2 - 1979/80 ($ millions)

	Loan forgiveness, guarantees, losses on loans, interest incentives	Program	Total
Ontario Development Corporation (ODC)			
1971/2	$2.08	$14.60	$16.68
1972/3	2.89	14.57	17.46
1973/4	3.77	23.83	27.60
1974/5	4.12	28.17	32.29
1975/6	11.92	19.98	31.90
1976/7	13.77	10.43	24.20
1977/8	10.29	17.22	27.51
1978/9	8.70	16.30	25.00
1979/80	9.79	17.99	27.78
Northern Ontario Development Corporation (NODC)			
1971/2	–	$0.86	$0.86
1972/3	–	4.15	4.15
1973/4	$0.05	5.77	5.82
1974/5	0.20	10.83	11.03
1975/6	5.25	21.01	26.26
1976/7	4.38	8.52	12.90
1977/8	4.22	9.32	13.54
1978/9	4.70	8.45	13.15
1979/80	3.80	8.71	12.51
Eastern Ontario Development Corporation (EODC)			
1974/5	–	$5.98	$5.98
1975/6	–	11.13	11.13
1976/7	$1.65	11.49	23.14
1977/8	2.37	15.36	17.73
1978/9	3.07	15.25	18.32
1979/80	6.28	11.90	18.18

SOURCE: Public Accounts of Ontario (various years)

fluctuated substantially, on the whole it increased during the 1970s and rose to a high of 497 in the 1980-1. In that year, the official estimate (ODC 1981) was that ODC loans would create 13,538 jobs within five years. (Of course, such figures make no allowances for possible offsetting job losses in unaided firms.)

Other direct assistance

The development corporations are not the only way in which Ontario offers firms direct assistance. Provincial subsidies and capital assistance have not, however, played a large role in Ontario. Even though they rose from only $8 million in 1970 to $327 million in 1980 – from 0.02 per cent to 0.29 per cent of Gross Provincial Product – the federal government has had a substantially greater role here. Even excluding petroleum subsidies, federal subsidies in Ontario, as shown in the economic accounts, were more than two-and-a-half times larger than provincial subsidies in 1981. (See Table 5. These figures are somewhat misleading, however, since 'federal subsidies to business in Ontario' include both agricultural subsidies and subsidies for the Canadian Broadcast Corporation.) Particularly since the establishment of new subsidy programs in the Ministry of Industry and Tourism in 1975, however, the provincial government's relative and absolute role as a provider of direct subsidies to business has grown in Ontario.

In a widely publicized move in 1978, for example, the Ontario government gave the Ford Motor Company a cash grant of $28 million (in addition to $40 million from the federal government) to build an engine plant in the right place (Windsor). Some of the innovation costs of small business have been subsidized through a series of programs set up over the years. Since 1981, other grants have been made under the aegis of the Board of Industrial Leadership and Development (BILD) program, which is described in a later subsection.

Tax incentives

Despite the proliferation of grants in recent years, the Ontario government has generally tended to favour aiding business through tax incentives, rather than direct subsidies. Almost every budget in recent years has contained some sort of tax incentive – or at least the promise of one – usually for investment in small business. The 1969 budget, for example, introduced a tax exemption for a manufacturer's purchase of production machinery. The 1970 budget continued exemptions for certain production goods to assist industry in 'reducing costs and improving competitive positions, as well as helping to defuse inflationary pressures on the economy' (*Ontario Budget 1970*, 30). An investment tax credit of 5 per cent was introduced in 1971, some time before a similar measure was brought in at the federal level.

Although the 1973 budget, for a change, tried to raise revenue from corporations, it also continued the talk of the need to 'nurture small Canadian businesses' (*Ontario Budget 1973*, 2). The tax on paid-up

capital introduced in that year was, therefore, designed to impinge more lightly on small businesses than on large ones. The 1974 budget again increased taxes but it also continued the emphasis on helping small firms and proposed (but did not establish) 'venture investment corporations' to help their financing.

The 1975 budget not only removed the retail sales tax from machinery and equipment purchases for two years but also made a specific attempt to aid the automobile industry by means of a rebate on the retail sales tax on purchases of new cars. The 1976 budget evidenced continued concern for small business by announcing a reduction in its corporate income tax. In the 1978 budget, the government introduced tax incentives for the mining and tourist industries; it also proposed an initiative to encourage research and development that was introduced the following year as the Employment Development Fund (see below).

'Venture investment corporations' to help finance small business were actually established in 1977. These corporations were intended to provide risk capital to small businesses by allowing a deduction of 25 per cent of such investments from taxable income. For various reasons, however, this program was not very successful. It was, therefore, replaced in 1979 by the Small Business Development Corporations (SBDC), which were established more broadly, both to direct funds to small businesses and to provide to them business and managerial expertise. Corporations investing in these SBDCs received a credit from the province equal to 30 per cent of their equity investment; individuals received a similar grant. In 1980, the SBDC program was expanded, the capital tax on small business eased, and a new investment tax credit for small business introduced. In 1981 the SBDC concept was again expanded, and in 1982 the provincial corporate income tax on small business was completely suspended temporarily.

A closer look at SBDCs

The SBDC is one of the most interesting of the many provincial tax incentives for small business. Investors who purchase equity shares of such a corporation get 30 per cent of their investment back (individuals get grants, corporations get tax credits). The SBDC, in turn, invests the funds in eligible small businesses, which are defined as those having fewer than 150 employees, paying at least 75 per cent of their wages in respect of operations in Ontario, and engaging in manufacturing, processing (excluding construction), tourism, publishing, or business activities that involve research (Badali, Dolan, and Evans 1983). No SBDC may control more than 49 per cent of any such business. As of October 1983, there are 392 active SBDCs in Ontario with investments in

406 firms, at a cost to the province of $62.2 million in grants and $2.5 million in tax credits (McQuillan 1984, 203).

In the 1984 budget, Treasurer Larry Grossman announced that the funding for the SBDC program would henceforth be divided into three funds – one for general investments, one for investments in northern and eastern Ontario, and one for investments in new small businesses, with the latter two taking priority. At the same time, a three-year tax holiday for new small businesses was announced. The perennial themes of regional development and small business thus continue to echo through Ontario budgetary policy.

An incentive somewhat similar to the SBDC exists in Quebec; investors receive a tax credit of 25 percent of equity investments in what is called a SODEQ (Société de développement de l'entreprise québecoise). In addition, the Quebec Stock Savings Plan, established in 1979, permits a special deduction from income for tax purposes for a wide range of equity investments. These two incentives can interact to reduce the investment risk for high-income SODEQ shareholders to as little as $0.163 per dollar invested (Badali, Dolan, and Evans 1983, 37), compared to $0.70 under the Ontario plan. Despite this generosity, however, SODEQs have not as yet been as successful as SBDCs in attracting funds, in part because of the greater restrictions on the nature of SODEQ investments (which are limited to not more than 33.3 per cent of shareholders' equity in manufacturing firms with fewer than 200 employees) and in part to the travails of the Quebec economy in recent years.[12]

Other specific programs

The 1970s witnessed the establishment of many other Ontario programs to aid small business. As of 1981, for instance, programs to help with innovation costs included:

- The Technological Assessment and Planning program (TAP) to give substantial subsidies for R&D contracted out to the Ontario Research Foundation or a similar research organization.
- The Program to Encourage Product and Process Innovation (PEPPI) to help finance the building of prototypes of inventions.
- The Product Development management Program (PDMP) to encourage new products that can be commercially exploited fairly rapidly.

The obvious importance attributed to small business in Ontario policy has been officially ascribed to a variety of factors. For example, the 1980 budget cited small firms' role in regional development, in employment, and in 'Canadianizing' R&D. The budget also referred to the possible use

of procurement policy to encourage small business. (At the federal level, this instrument has more often been suggested to foster high-tech industries.) This theme was developed the following year in somewhat more ambitious terms:

> Government purchasing policy represents a potential key instrument of national industrial development that is capable of influencing rationalization, specialization, research and development, multinational enterprise operations, small-business growth, and regional development. (Grossman 1981, p. 19)

Presumably in order to implement such ideas, Ontario introduced a 10-per-cent preference for Canadian (not just Ontario) suppliers of goods and services. It also created the Office of Procurement Policy, which helps to co-ordinate departmental purchases and can recommend that a larger preference be given in special circumstances. Since, according to Grossman, public sector purchases account for more than 10 per cent of production in such sectors as construction, office furniture, community, business and personal services, and pharmaceuticals and medicines, such measures may be significant in practice.[13]

Despite the continued emphasis on the role of small business, the Ontario government has, at times, followed an apparently contradictory policy in the name of rationalizing industrial development. The 1977 budget, for example, stated, 'We cannot afford . . .with our small market base, to have many firms competing in one sector.' On these grounds, the Ontario government supported the merger of the major appliance divisions of General Steel Wares and Canadian General Electric to form the Canadian Appliance Manufacturing Company.

In an example of federal-provincial overlap, Ontario has also put in place a set of programs to assist export-oriented industry. One was the Export 80 Trade Action Plan, whose goal was to improve Ontario's balance of payments by assisting its export industries. The Ontario Development Corporations help finance the export receivables of Ontario firms – in 1980/1 to the tune of $26 million. In addition, the Ontario government finances trade missions and fairs, helps to set up trade associations, and has set up the Ontario International Corporation to help obtain capital projects arboad.

Another approach has been the setting up, in 1973, of the Urban Transit Development Corporation (UTDC) as a Crown corporation. Among its specific goals are the development of innovative public transport, stimulation of private sector production of transit equipment, and creating a Canadian centre to advance public transit technology.

An allegedly more general program of assistance to industry was the Employment Development Fund (EDF) established in the 1978 budget. Its announced purposes were to encourage projects that would make a long-term contribution to employment, to foster the development of needed job skills, to have the potential for significant export development or import replacement, to involve the development of new products and processes through Canadian-based innovation, and – to conclude this list of good things – to stimulate key industries and regional development.

Initially, the EDF was largely used to aid the pulp and paper industry, which received $100 million of the $200 million budgeted for the fund in 1979/80. In general, most of the funds (including some $125 million allocated the next fiscal year) seem to have gone to more-or-less viable companies for proposed general expansion. (The EDF ended in March 1981).

Post secondary education and training

As mentioned in Chapter 2, one of the major 'industrial' roles of the provinces is to provide trained labour. The Bovey Commission's consideration (1984) of Ontario's financing of universities, for example, notes that a good economic case can be made for increasing such funding because the capacity of the provinces' universities to support research has declined sharply in recent years and because of the need for more highly trained people.[14]

In addition to taking a major role in funding universities and community colleges, Ontario has three special programs for training (Grossman, 1984):

- The Ontario Training Incentive Program (OTIP), which trains the unemployed and provides incentives for on-the-job training ($6.0 million in 1983-4).

- The Employer Sponsored Training program (EST), which funds the Community Industrial Training committees through which representatives of business, labour, educational institutions, and human resources agencies meet to identify the skills needs of local employers and to co-ordinate plans for training ($3.4 million in 1983-4).

- Training in Business and Industry (TIBI), which assists in training for and implementing the use of advanced technology ($9.4 million).

A variety of other programs are designed to deal particularly with youth employment and have little to do with raising skill levels (Dawson, Denton, and Spencer 1982).

The BILD program

Throughout the 1970s, the provincial government seemed to become increasingly concerned about developing an industrial strategy. In the 1978 budget, for example, a Shop-Canadian program was established as

> one element of a broadly based set of industrial development strategies. The strategies have a single objective: to help Ontario manufacturing to achieve the industrial strength that will be needed world-wide through the 1980s.

The then opposition party climbed even higher on this bandwagon in a 1979 statement:

> *The Ontario Liberal Party believes the primary objective of an industrial strategy must be job creation.* A strong, innovative manufacturing sector provides for a whole range of jobs, from highly-skilled technicians, engineer, scientists and craftsmen, through white-collar professionals to semi-skilled and unskilled workers. Second, an industrial strategy must promote an indigenous *research and development* capability. Third, it must generate and support indigenous *entrepreneurial and managerial talent.* Fourth it must promote and assist *small business* in Ontario. And finally, an industrial strategy must support rationalization in selected sectors. In some instances mergers are the most suitable mechanism. We believe that a healthy economy should consist of a mix of small, medium and large firms, since each enterprise has a different optimal size in terms of efficiency and effectiveness depending on its product and the market it serves. (Ontario Liberal Party 1979).

Presumably in response to such challenges, in January 1981 the Ontario government unveiled BILD – the Board of Industrial Leadership and Development – to which was entrusted the 'responsibility to design and implement an economic development strategy for the province' (Ontario 1981, 1). Priority for the development of the provincial economy was identified as falling in six areas: electricity, transportation, resources, technology, people, and communities. By far the largest financial commitment, said the 1981 document, was made to transportation and resources.

Despite the fanfare, all the BILD program did at first was to package a number of existing programs. It has placed particular emphasis on technology. Its staff have worked to encourage high-technology industry to locate in Ontario. And its five-year expenditure package, totalling

$1.1 billion, included more than $500 million to be spent on science and technology, allocated as follows (Miller 1983):

– $107 million to the IDEA Corporation, a provincial agency established to improve the diffusion of technology, to increase the availability of venture capital, and to strengthen university-industry research links. These funds were earmarked for start-up equity capital for industries in five high-tech fields: microelectronics, biological and medical sciences, information processing and transmission, chemical and process technologies, and manufacturing automation.

– $104.5 million to five somewhat less avant-garde and (typically) regionally scattered 'industry-oriented technology centres': automotive parts in St. Catharines ($14.5 million), resource machinery in Sudbury ($20 million), farm equipment and food processing in Chatham ($10 million), advanced manufacturing in Cambridge and Peterborough ($40 million), and microelectronics in Ottawa ($20 million).

– $30 million to establish Allelix Inc., a joint venture with the Canadian Development Corporation and Labatt's in biotechnology.

– $5 million (one-third of the cost) to install 250 Teliguide terminals in Toronto as part of marketing efforts for Telidon.[15]

– $8.6 million in a joint venture with the University of Toronto to establish the Institute for Hydrogen Systems.

Similar 'targeted' innovation-assistance has gone in recent years to such activities as the Canadian Educational Microcomputer, the Ontario Centre for Remote Sensing, and the Exploration Technology Development Fund. In addition, through BILD, matching grants of $4.5 million have gone to universities with private research contracts.

Perhaps heralding more of the same, the Ontario government set up a Task Force on Microelectronics in 1980, whose report in October 1981 recommended extended support for the microelectronics industry through tax incentives, aid in research and development, and the establishment of retraining programs.

Conclusion

The recent emphasis on high tech in provincial as in federal policy is clear in two recent Ontario discussion papers on R&D and technological diffusion. The first (Miller 1983) correctly notes that more than half of Canada's R&D is already located in Ontario, lists the province's extensive measures in aid of R&D, and states that Canada, as a whole, has consistently provided a greater subsidy to R&D than other industrial

countries. Unsurprisingly, this paper's basic conclusion is that there is little need to do much more.

Only a year later, however, the provincial government's concern about Canada's 'poor' R&D performance and the consequent need for more high-tech manufacturing shot up considerably, judging from the discussion in Grossman (1984).[16] Apart from some words on the possible desirability of facilitating mergers or using joint ventures to support core companies (which Howard and Stanbury [1984] call 'chosen instruments'), even this most recent paper is, in classic Ontario style, generally cautious in assigning any kind of lead role to government. As it notes:

> The approach of the Ontario government is to rely on market forces, combined with supportive actions by government, to shape the economic transformation. In general, individuals and firms are in the best position to assess their own capacities and respond to needs signalled by the market. . . .Government assistance is warranted in education, training, research and development, and venture capital. It is also sometimes worthwhile for governments to encourage the linkages that develop as a result of supporting emerging technologies or potential 'core companies.' (Grossman 1984, 44)

This sort of cautious, balanced statement contrasts sharply with the sort of radical go-for-broke philosophy found in the almost contemporaneous statements on industrial policy issued in Alberta (1983) and Quebec (see Watson 1983a). The Ontario government, like all other Canadian governments, will no doubt continue to scatter some funds across the province, especially in the name of small business, and to get involved in the occasional high-profile high-tech venture. But unless the recent defeat of the world's longest-standing elected government changes matters drastically, Ontario is not likely to go overboard for high tech or anything else. The Ontario government has, on the whole, been doing (or not doing) approximately the right things with respect to industrial policy. Although improvements are certainly possible, it should continue to keep on doing (and not doing) these things in the interest of Ontario's (and Canada's) citizens.

NOTES

1 This new body, led by a secretariat of trusted experts – one is tempted to say philosopher-kings – would be responsible to both levels of government, which would be equally represented on the governing board. Its essential function would be to receive planning scenarios

from the secretariat and pass them on for implementation to the respective legislatures.

2 For more detailed discussions see of federal industrial assistance policies, see Milne (1983), Morici et al. (1982) and, for the full array of policies, Johnson (1984).

3 Regional development programs were recently realigned to some extent, with new economic and regional development agreements (ERDAs) being signed with all ten provinces (Surtees 1985, B1).

4 These figures are based on data (usually for a five- or six-year period in the early 1970s) covering $1.2 billion distributed in nine separate federal grant programs, including DIPP and RDIP but not the other three programs shown in Table 11. See also Table 13.

5 Binhammer, McDonough, and Lepore (1983) find that a proportionately large share of IRAP grants went to relatively small firms, especially in Ontario – which received 56.5 per cent of all such grants in 1962 through 1979, compared to only 10.8 per cent of RDIP, grants from 1969 to 1979, for example.

6 In response to the common argument that because others subsidize exports, so must we, Raynauld has tellingly replied: 'Si d'autres gouvernements choisissent de se ruiner, on n'est pas tenu de les imiter' (1983, 7).

7 These figures do not include some $300 million in equity capital provided Canadair and de Havilland, which are owned by the federal government.

8 French describes in detail the tortuous history of federal attempts to develop an industrial strategy up to 1980. As he notes in his conclusion, despite the heightened concern about these issues in recent years, the adoption of a concerted strategy 'would still be seen by the two principal parties as at best a high risk / high returns alternative, quite out of character with recent Canadian political history and party traditions' (1980, 155). Like many other commentators on these matters, French seems bothered by this conclusion, perhaps because it is neither tidy nor conducive to sweeping recommendations for the immediate achievement of Utopia. It can also, of course, be seen as a strong testimony to the basic good sense of Canadians, even when gathered in political parties!

9 One is reminded of the Bretton Woods provision that the International Monetary Fund should assist countries whose balance of payments was in difficulty provided the problems reflected 'fundamental disequilibrium' and not avoidable and reversible domestic policies. This distinction has not proven very workable either.

10 The vast subject of the role of foreign investment and foreign ownership in shaping industrial development in Canada cannot usefully be discussed here. As Safarian (1983) notes, although Canada, which is the industrial country with by far the largest proportion of its economy under foreign control, has unsurprisingly talked a great deal about these concerns, it is not clear that it has done much more about them than other countries that have made less fuss.

11 Palda (1984, 11) points out that there is no sign of rapprochement between economists and politicians on these matters. A particularly nice illustration is afforded by Nelson's (1985) account of an interview with Peter Lougheed; the Alberta premier simply ignored the strong criticisms made by Walker (1984) and asserted his intention of going ahead with the plans set out in Alberta (1983) – a document that obviously reflected his own thinking to a large degree. Since the government of Alberta and the Fraser Institute [which published Walker (1984)] are on the same political wavelength in many respects, their sharp divergence on this issue is especially striking.

12 Other provinces too have frequently had recourse to tax incentives for small business. For example, Nova Scotia established 'venture capital corporations' in 1981; they receive an interest-free loan equal to the equity capital paid in.

In 1984, when Ontario introduced a new three-year exemption for small businesses, Newfoundland reduced its corporate income tax on small business and also removed the sales tax from purchases of capital equipment by manufacturers; Nova Scotia granted a 10 per cent tax credit on R&D expenditures; Saskatchewan eliminated its corporate income tax on small manufacturing and processing firms and established a venture-capital tax credit similar to that offered for Ontario's SBDCs; New Brunswick introduced a tax holiday for small business, expanded its small-industry financal-assistance program providing interest-free loans to small businesses to cover certain nonmanufacturing businesses, and announced it would introduce a venture capital incentive; Manitoba introduced a 6 per cent investment tax credit for manufacturing and reduced payroll taxes on small businesses; Alberta announced it would soon introduce a small-business venture-capital scheme; and British Columbia commissioned a study of tax measures to stimulate business. Only Quebec and Prince Edward Island refrained from jumping on the

business incentive bandwagon in 1984 – although both were already riding it.

The desire to use the tax system to stimulate local industrial development was also apparently a principal motive behind the creation of a separate corporate income tax in Alberta in 1981 and the subsequent extended discussion of separate personal income taxes in both Ontario and Alberta (see Hartle et al. 1983).

13 In fact, all provinces now offer some form of preference to Canadian suppliers; unlike Ontario, many favour local suppliers over other Canadian suppliers (Trebilcock et al. 1983, 243-7).

14 Within its frame of reference, the Bovey Commission could not, however, recommend such an increase.

15 Palda (1984, 115-17) discusses the case of Telidon at more length.

16 High-tech industry may be defined as including pharmaceuticals and medicines, communications equipment, aircraft and parts, office machinery, electrical industrial equipment, industrial chemicals, plastics and synthetic resins, and scientific and professional equipment. See Bird (1984a) for alternative definitions.

4
Macro industrial policy

The statesman, who should attempt to direct private people in what manner they ought to employ their capital, would not only load himself with a most unnecessary attention, but assume an authority which could safely be trusted, not only to no single person, but to no council or senate whatever, and which would nowhere be so dangerous as in the hands of a man who had folly and presumption enough to fancy himself fit to exercise it.

Adam Smith, *The Wealth of Nations*, 1776

Consider the following growth areas where we are not in the game at all: pharmaceutical, medical devices, fine chemicals, advanced industrial materials, precision machinery, advanced robotics. And some areas where we are barely represented: biotechnology, advanced software, computer hardware, lasers and optics. . . .Government must foster the high value-added sector in Canada by appropriate taxation and procurement policies as well as by research and financial support and the production of trained manpower. Government should bring together all of the interested sectors in the country in order to arrive at a consensus on the subject of diversification and should set appropriate targets to be achieved.

Stuart Smith, Chairman, Science Council of Canada, 1985

Parts of this chapter draw heavily on the studies previously published in this series, particularly those by Milne, Green, Kotowitz, and Saunders.

The debate between those who are for and those who are against planning, industrial policy, or whatever label is in vogue has gone on for a long time. Stuart Smith's arguments for a stronger, more directive role for government in Canadian industry are representative not only of the long-held position of the Science Council but also of almost every planner who has ever set pen to paper: there is a problem; it must be solved; government must take the lead in doing so; therefore, it must adopt an industrial strategy, invest more in engineers, or whatever.

Faced with such reasoning, most economists recall what Adam Smith said two centuries ago about the high probability that government will fail in such interventions and that seeking 'consensus' from the 'interested sectors' will result in some sort of 'conspiracy against the public.' Since the present study rests on the work of economists, it should surprise no one that our sympathies lie generally with Adam Smith, essentially for reasons set out earlier in this series by Watson (1983b). What is a bit more surprising is the way repeated demonstrations of the ineffectiveness and cost of most government subsidies to business (Bird 1980b; Usher 1983; Raynauld 1983; George 1983; Palda 1984) are simply ignored. It sometimes seems that for every study showing that a particular program is of little or no use in reaching its stated objective, government launches a new program (or even eleven, since the provincial governments usually get in the act too).

There is no need to replay here the entire debate on industrial policy. It has gone on for a long time, under many labels, at levels ranging from the philosophical (holistic utopians versus pragmatic incrementalists) to the mundane (should the government buy all its telecommunications equipment from company X?). And it will probably go on for years to come, no matter what is said here. Nevertheless, several points must be noted to set the stage for a discussion of what, in principle, industrial policy should comprise in a country like Canada.

First, as demonstrated in Chapters 2 and 3, Canada and Ontario already have extensive industrial policies and they will continue to do so no matter what the Science Council of Canada, the Economic Council of Canada, the high-tech business community, academic economists, or anyone else says, pro or con. Industrial policy of some kind is clearly here to stay.

Second – fortunately in light of the first point – there is a strong case for the right kind of industrial policy in Canada. No one on either side of the ongoing debate denies, for example, that governments can and should provide appropriate macroeconomic and structural policies to foster industrial development. Nor are many likely to dissent from the view that government in an open (and consequently vulnerable) modern

society such as Canada has an important role in smoothing the way for the often painful dislocations required for industrial adjustment. Analyses of the productivity decline of recent years, for example, emphasize the importance of measures facilitating market adjustments – particularly adjustments by labour – to changing circumstances, including technical change (see, for example, Daly and Rao 1985).

Third, as our review of present policies suggests, there is no question that many current industrial policies are counterproductive in that they block necessary adjustment or give inappropriate structural signals. Other policies are simply ineffective in that they do not achieve their intended goals or do so only at a cost that exceeds the benefits attained.

Few on either side of the debate seem likely to contest these general assertions. There are, however, substantial differences in the lessons each side seems to draw from what has gone on to date in the name of industrial policy. The proponents of a full-blown government-led industrial strategy for Canada tend either to ignore the generally dismal record of government intervention in industry in this country or to pick out examples of 'success' at home or abroad to show that it can be done. Many of their arguments seem to assume, as the military-strategy metaphor suggests, that the objectives of industrial policy are clear and generally agreed upon – for example, to increase Canada's market share in high-tech industry. All that is needed to achieve these objectives, they suggest, is the will to get on with the task. Indeed, they often assert that we *must* do something or other because everyone else is doing it. If we don't get into the game (usually in a big way), disaster will ensue as sure as night follows day.

Those on the other side of the argument tend to think that Canadian governments have often demonstrably failed in picking winning sectors and are almost inevitably going to continue to fail given the intractable nature both of the problem and of people. The market is far from perfect, they say, but it is more likely to provide and heed the right signals than is government, and it will certainly be quicker to admit and reverse error.

Yet, even those holding such skeptical views of government's abilities to manage micro industrial policy can quite consistently argue that governments can and should have more (and better) macro industrial policies for framework and adjustment. All Canadians would be better off if governments concentrated on doing what they can do instead of trying to foresee the future.

We stand squarely on the side of this modified noninterventionist position, which appears the only one consistent with the evidence, something to which scholars and scientists – if not always politicians – are

supposed to pay close attention in formulating their ideas of how the world works. The evidence, to be blunt, is that micro industrial policy in the sense of deliberate government selection of certain industries, let alone firms, for special support and protection is likely, over time, to make Canadian society worse off than it otherwise would be. The same can be said – albeit with somewhat less assurance – with respect to structural policies that favour exports, manufacturing, or even R&D. Finally, policies that shore up faltering industries, sectors, and regions are also, as a rule, bad from the point of view of the well-being of Canadians as a whole.[1]

On the other hand, macroeconomic and structural policies that facilitate the fullest development of economic potential and properly structured industrial and worker adjustment policies are clearly essential ingredients of economic success in any country. Moreover, such policies are all too often sadly deficient in practice. To right present wrongs in these respects is a massive and important task that Canadians urgently need to have undertaken.

MACROECONOMICS AND INDUSTRIAL POLICY

As we saw in Chapter 2, Canadian federal and provincial governments have taken an increasing interest in industrial policy in recent years. One reason for this increase has undoubtedly been the disappointing performance of the Canadian economy over the past decade. The national unemployment rate, for example, soared from 5.5 per cent in 1973 to more than 12 per cent in 1983. Real GNP growth slowed markedly after 1973 and was actually negative in 1982 and 1983.

Everyone agrees that at least part of these difficulties can be attributed to inappropriate macroeconomic policy, past or present, but some people think even appropriate macroeconomic policy alone insufficient to produce a satisfactory economic performance. Governments have thus been under increasing pressure to use selective industrial policies to stimulate employment, productivity, and growth. In addition, the recession itself has produced a steady stream of supplicants – regions, industries, and firms – for special assistance. That governments have been unable to improve general economic conditions has probably made them more willing (even eager) to provide selective assistance in especially visible cases.

To what extent are the symptoms being treated through industrial policy measures really attributable to macroeconomic ills? As usually understood, industrial policy is selective in nature, being targeted at specific regions, industries, firms, plants, or inputs. Macroeconomic policy, on the other hand, aims at affecting the aggregate or national

average rates of such variables as output, employment, inflation, and interest rates. But such policy is never neutral in its impact. Aggregate-demand restraint, for example, affects some regions, industries, and firms more quickly and severely than others. The reason for many micro – industrial – policies lies in the differences of those impacts. Take, for example, a restrictive monetary policy intended to offset pressures on the exchange rate. It also tends to divert funds from investment, particularly in residential construction and durable manufacturing. Such sectoral problems often lead directly to countervailing policies that are specific and interventionist. For example, during the recent recession, the housing sector received special aid through government grants to first-time buyers. In such cases, the sectoral policies are intended to offset to some extent the harmful sectoral effects of macroeconomic policies. The attempt may or may not work. As Schwartz and Choate emphasize:

> The interaction between macro policies and more specific micro policies is the key to the problems we now face. Micro interventions . . . can fail or flourish according to the degree that they work with or against macro policy. (1980, 67)

The industrial effects of macroeconomic policy

Macroeconomic policies may have not only direct demand-side impacts but also supply-side effects that become increasingly important over the longer run. Similarly, industrial policy, even if designed primarily to affect supply, feeds back to the demand side. A general-equilibrium approach is, therefore, needed to examine the overall impact of these policies. Such an approach is taken by Milne (1985), who employs the FOCUS/PRISM models of the Institute for Policy Analysis of the University of Toronto to evaluate the impact on economic performance of a variety of policies. Although the results of this exercise are to some extent model-specific, they are nevertheless worth consideration here to illustrate the interdependence of macroeconomic and industrial policy.[2]

Take the example of using monetary policy to keep the nation's currency highly competitive, a manoeuvre some observers, such as Shepherd (1980), suggest has been an important element in the export-led growth of Japan and West Germany in recent years. (Along with this competitive currency went a steady fiscal policy and specific aid to export industries.[3]) The results of Milne's model of the impact of a 10 per cent exchange-rate depreciation of the Canadian dollar achieved through a less restrictive monetary policy that lowers the interest rate and hence reduces capital inflows are shown in Table 15.[4]

TABLE 15

Average annual changes resulting from a 10-per-cent depreciation of the Canadian dollar (1971, $ millions)

	1983-6	1987-90
National		
GNP	$3,187	$4,495
Consumption	444	1,872
Investment	1,230	1,377
Exports	891	920
Imports	−43	−315
Interest rate	−0.89%	−1.19%
Unemployment rate	−0.71%	−0.93%
GNP price deflator (1971 = 1.00)	0.06	0.19
Industrial		
Manufacturing output	$1,664	$1,293
Primary metals	190	214
Motor vehicles	230	237
Machinery and other transportation equipment	144	164
Chemical, rubber and petroleum products	107	152
Services output	1,484	1,990
Goods output	1,551	1,884

SOURCE: Milne (1985). Each figure in this table shows the average annual *change* in the variable indicated, compared to its value in a control or base-case projection.

The first part of the table shows the impact on the national economy as a whole. As might be expected, the trade balance in constant dollars shows a marked improvement compared to the assumed base case (control solution) in the absence of exchange-rate depreciation. Final demand grows as a direct result of foreign-trade expansion and also as a result of the increase in investment that comes from interest rates lower than those in the control solution. The consequent stronger growth in output, in turn, increases growth in employment and thus lowers the unemployment rate throughout the projection period.

For the nation as a whole, then, it might appear that this policy is indeed, a good one. When its effects on inflation are considered, however the assessment changes. As the Canadian dollar depreciates, the price of imported goods rises, pushing up inflation. In fact, the inflation rate remains above that of the base case throughout the simulation period. Similarly, although real growth in output increases significantly in the first three years, according to these simulations, in later years it returns to the rate exhibited in the base case (Milne 1985, 21, fig.1). Thus, although a policy of exchange-rate depreciation could achieve a lower

unemployment rate, it would have little effect on long-run, overall growth and it would increase inflation.

The second part of Table 15 shows the policy's effect on various sectors of the economy. The stimulation of exports and investments has a sizeable impact on the manufacturing sector, especially through increased investment in primary metals, machinery and other transportation equipment, and the chemical, rubber, and petroleum-products industries.[5] Naturally, there is also some increase in exports and hence output in the resource-based industries (agriculture, forestry, and mining). Finally, the service industry also increases in response to increased domestic activity.

In the context of the present study, this simulation suggests two important points. First, one must consider, as far as possible, all effects of policy, short term and long term, demand side and supply side. A conscious policy to depreciate the Canadian dollar would probably not result in a permanent increase in the growth rate of aggregate real output. Although the levels of output and employment would increase, the major impact over an extended period would be more on inflation than on industrial growth.

Second, the final effects of a macroeconomic policy may depend on accompanying micro policies, which ideally should be designed for beneficial feedback. In the example, since most of the benefit of depreciation occurs through the initial growth of exports, some special support to help Canadian industries expand their export markets might improve the overall outcome of such a policy. That is, rather than considering exchange-rate depreciation as a substitute for special aid to export industries, we might obtain the best aggregate results by using such aid as a complement to depreciation, offsetting some of its detrimental effects on the economy as a whole. If new international markets could be opened to Canadian firms in this way, the result might be a higher growth rate of real output over the longer term. Expanded export-promotion activities (for example, trade fairs and the provision of information) could help Canadian exporters find new buyers at the same time that Canadian-produced goods were becoming relatively cost-attractive.

The macroeconomic aspect of industrial policy

Even this simple example suggests that particular macroeconomic policies may have quite differentiated industrial and regional effects. Moreover, their long-term impact on aggregate national targets may depend to a considerable extent on the nature and intensity of accompanying microeconomic policies. More or less the same can be said, in reverse, about specific industrial policies. Such policies may have

effects at both the national and the disaggregated levels that are not obvious, and their final effects may depend to a considerable extent on the accompanying macroeconomic policies.

Recently, for example, both the federal and the Ontario governments have been much concerned about the future of the auto industry, which accounts for some 14 per cent of the province's manufacturing. An appendix to the 1976 Ontario budget, for example, noted three difficulties facing the industry: productivity was not improving, the Canadian share of auto assembly was declining, and the deficit on auto parts was increasing rapidly. Partly in response to such concerns, the federal government commissioned a special study of the automobile industry; the resulting report suggested, among other things, that Canada attempt to attract Japanese and European auto-parts manufacturers to locate here (Reisman 1978). About this time also, as described in Chapter 3, the Auto Parts Technology Centre was established to attempt to improve Ontario's auto parts production, and the federal and provincial governments co-operated in 'bribing' Ford to locate an engine plant in Windsor.

Nevertheless, the problems that led to these responses have continued into the 1980s, and the strong Canadian auto union and the continued success of low-cost foreign producers may, over time, lead to further decline, despite some apparent current revival. Although real investment in the industry in Canada grew rapidly after 1978, as a recent study by Perry indicates, large subsidies from the federal and Ontario governments were one reason for this growth. He argues that policy makers now have only two basic choices:

> – To actively manage the decline of this industry with a view of facilitating the shift of resources into more efficient sectors . . . or,
>
> – To resist the decline . . . in an attempt to preserve employment for as long as possible. (1982, 105)

Whether this conclusion is correct or not, it is an interesting exercise to consider the effects that would result from permitting Canada's motor-vehicle industry to wither away. As shown in Milne (1985), the results to be expected depend very much upon the macroeconomic policies in place. If the exchange rate were simultaneously allowed to depreciate, a decline of the auto industry would have almost no effect on real GNP because the depreciation would bring about an offsetting increase in exports of other goods. Since most of the motor-vehicle industry is in Ontario, one might expect the net result to be much less favourable for the province. Yet the

simulation shows that by 1990 Ontario's real provincial product would fall by less than 1 per cent (compared to the base case) because the depreciation of the Canadian dollar would induce the province's other export-oriented industries to increase production sufficiently to offset much of the decline in motor vehicles. If, however, the exchange rate were held fixed, a decline in auto production and hence exports would have a much larger impact on output and on employment, nationally and provincially.

Such simulations highlight the vital role of macroeconomic policy in determining the overall impact of changes in any particular industry. Although many analysts argue that a decline in the motor-vehicle industry, for example, would cause major problems in the Canadian economy, Milne's simulations (1985) suggest a much smaller effect (provided the exchange rate is left to float freely).

This is not to suggest, however, that adjustment assistance would not be needed with exchange-rate depreciation. Indeed, such assistance (in the form of retraining and mobility assistance) would almost certainly be required at least for some workers (Saunders 1984). The need for such assistance would probably not be nearly as great as has sometimes been argued, however. Change would be costly for those directly involved in the declining industry, of course, but the offsetting growth elsewhere in the economy should make it feasible, at least in principle, to spread the burden of such adjustment costs more widely and fairly.

Policy interdependence

The analysis in Milne (1985), partly summarized here, leads to three general conclusions. First, the effects of a particular industrial policy may vary, depending upon the precise macroeconomic environment within which it is enacted. Dungan and Younger, for instance, demonstrate in detail how critical exchange-rate policy responses are in determining the impact on employment of changes in technology and productivity:

> The nature and extent of the employment impacts of technology change do not depend primarily on the nature of the technology itself, whether it is capital or labour saving or both, but rather are much more sensitive to other factors in the macroeconomy. (forthcoming, 25)

At the very least, such results suggest that if specific industrial policies are to be undertaken to achieve particular policy goals, they must be accompanied by appropriate macroeconomic policies.

Second, even the most general macroeconomic policies may have significant industrial and regional effects. And, to look at the other side of this coin, decision-makers must carefully consider the effects of the general business cycle on particular industries before undertaking structural policies to aid certain industries or sectors. To combine these two caveats: the impact of top-down macroeconomic policies on industries and regions should be explicitly taken into account before evaluating whether bottom-up microeconomic policies should be put in place. Is the 'crisis' in industry X the result of some permanent change in the state of the world, of the cyclically sensitive nature of the demand for its products, or of some combination of the two? Careful diagnosis of the nature of the problem should precede policy prescription. In general, as Schwartz and Choate (1980) argue for the United States, Canada seems to need more explicit co-ordination between micro and macro industrial policies.

Third, decision makers must also remember there is a great deal that we do not know about the interactions between general and industry-specific policies. For any given situation, there is probably an optimal policy mix that is a combination of specific and general policies. Unfortunately, the econometric models now available are not particularly well suited to considering the impact of specific industrial developments on the economy as a whole. This limitation does not mean, however, that the results of such models can simply be thrown aside or that the macroeconomic environment can be ignored, as has too often been done in Canadian discussions of the impact of industrial policies. On the contrary, even such necessarily crude simulations as those presented in Milne (1985) or in Dungan and Younger (forthcoming) provide strong evidence of the importance of considering the effects of specific policies explicitly in the framework of a general model.

Increasing the competitiveness of Canadian manufacturing through productivity increases is, for example, a solution many people favoured for Canada's current employment ills. But, as Dungan and Younger argue:

> The central bank has the power to convert enhanced productivity into inflation reduction (at the expense of lost employment) or into sufficient extra growth to prevent any unemployment associated with technology change. (forthcoming, 25)

That is, even if the remedy proposed – increasing productivity through controlling costs, improving management education, or whatever – is correct in some sense, its effects on employment will depend primarily on the nature of macroeconomic policy. The point is not that correct macro-

economic policy alone can do the job. But, without such policy, the job cannot be done.

STRUCTURAL POLICY AND INDUSTRIAL DEVELOPMENT

Macroeconomic policy is thus an essential component of the framework or setting within which industrial development takes place.[6] By no means, however, is the task facing governments solely that of getting the macroeconomics 'right'. In fact, almost everything governments do affects industrial structure and development in one way or another. Thus, to ensure Canada's industrial health, policy makers should presumably judge all such 'framework' policies according to whether they promote the growth of businesses that are internationally competitive, and allow the decline of those that are not.

Let us consider the fate of two suggestions of this sort made in the late 1970s by eminent advisory bodies. The Economic Council of Canada (1975) has proposed an industrial strategy based on free trade, which would allow successful firms to increase their productivity through the longer production runs made possible by more accessible export markets.[7] In contrast, the Science Council (1979) proposed a strategy of technological sovereignty, defined as 'the ability of a nation to *develop* and *control* the technological capability necessary to ensure its economic, and hence its political, self-determination.' In a later Science Council study along similar lines, Steed (1982) suggested that government assistance to industry concentrate on a small group of firms defined by size (100 to 2,500 employees in Canada), ownership (Canadian), and nature (R&D – intensive manufacturing of machinery, transport equipment, electrical products, petroleum and coal products, and chemicals and chemical products). Using 1976 data, Steed found only 165 such 'threshold firms' in Canada in 1976.

Although these two strategies differ in their theoretical analysis of the Canadian economy and its problems, they both involve backing winners. The ECC would determine winners by competition in international markets and 'back' such firms simply by allowing them to expand as much as they can without trade restrictions and by not protecting or supporting uncompetitive rivals. The Science Council, on the other hand, would select winners on the criteria of size, 'Canadian content', and R&D use and back them with specific industrial assistance programs. In practice, both approaches encounter the same political dilemma: what is to become of the losers? The desire to offer some protection to every industry and region seems to be a central element of Canadian federalism and as such stands in the way of adopting any coherent framework for industrial policy. Given the many low-technology, uncom-

petitive firms being protected and assisted in Canada today, it is evident that neither council's approach guides current industrial policy.

Economic efficiency and technological sovereignty do not, of course, exhaust the possible objectives of industrial policy. Others include the protection of existing employment in all industries, or the expansion of manufacturing output. Another ECC study (1982) finds, for instance, that the enabling legislation and annual reports of government agencies lending to business refer less frequently to efficiency or financial-market imperfections than to such objectives as the 'transformation of industrial structure, job creation, and the establishment of new industries in a designated province or region.' Such criteria are often so broad as to justify aid in one form or another to almost any firm or industry.

TAX INCENTIVES FOR INVESTMENT

In brief, eclectic incoherence appears to characterize framework or structural policy in Canada. A brief and partial look at tax policy can illustrate the point. (Much the same conclusion would emerge from examining any other area of structural policy: human resources policy, trade policy, competition policy, and so on.)

Proposed tax solutions to our economic dilemmas are not in shortage.[8] Similar suggestions for tax incentives or changes, allegedly guaranteed to improve well-being in one way or another, can be found in almost every brief to government by every interest group. Moreover, as Bird (1980b) documents, Canadian governments have been far from reluctant to respond to such suggestions. Over the years, they have created a truly impressive array of tax incentives of varying generosity and scope. Like specific industrial assistance policies, however, these incentives appear to reflect more the skill and influence with which various groups press their claims than coherent policy or firm evidence that such measures are either efficient or effective.

As an example, let us take a look at the investment tax credits often used to stimulate investment expenditures and to create a climate conducive to business expansion. Such across-the-board tax credits obviously constitute a general industrial policy. The theory is that they stimulate investment in the aggregate, with the market determining the precise industrial allocation. On the supply side, the increased investment enhances the capital stock, which, in turn, boosts output through the production function. On the demand side, since investment is also a component of final demand, aggregate demand is also stimulated. The net effect, policy makers assert, is to increase the level of output and to decrease the inflation rate over some period of time.

In a recent American study, however, Adams and Duggal (1982) find that although output did indeed increase in response to an investment tax credit, the unemployment rate also rose owing to the substitution of capital for labour. (May [1979] suggests similar results for Canada.) The appropriate policy response, argue Adams and Duggal, may be to provide a demand stimulus additional to that provided by the tax credit itself. As in the exchange-depreciation case, instead of macroeconomic and micro-economic policies being substitutes, they turn out to be complements: both are needed to achieve the two presumed policy objectives.

In a parallel Canadian study, Braithwaite (1983) examines the impact of several investment incentives on economic growth and finds that all increase expenditures and that the increased capital stock results in an increase in the growth rate of labour productivity and thus some moderation of the inflation rate. Over time, however, the current-account deficit worsens because a considerable portion of investment goods in Canada are imported and also because real income (and hence imports) increase. At the same time, the government deficit increases because the incentives reduce government revenues, even in the long run. Again, the precise economic impact of any particular policy turns out to depend on other policies (and on the precise model being used).

Milne (1985) similarly shows that the impact of a general investment credit differs significantly with the assumptions made. In addition, he demonstrates that the greatest effects of such a policy would be felt in the manufacturing sector, particularly in primary metals, motor vehicles, machinery, and other transportation equipment, and that Ontario would receive most of the benefit because it has the most industry of any region.

Results such as these, however, must be taken with a grain of salt. First, there are serious questions about how to model the effects of even general investment incentives. All the results mentioned in the text are thus quite model-specific, so, as Bird (1980b) emphasizes, there are substantial questions as to their accuracy with respect to the real world.

Second, it is very difficult to determine exactly how investment tax credits affect investment. One cannot recommend following such good advice as, for example, the suggestion by Braithwaite (1983) that industries that exhibit the largest increases in productivity should receive the largest incentives because there is almost no evidence on how investment incentives affect particular industries. Third, there are many questions about the overall effects of tax incentives on investment. For example, Bosworth (1984) concludes that in the United States they have probably had more effect on investment in new equipment than on business structures. Moreover, he says, even in the case of equipment, the tradeoff is not particularly favourable. He estimates that on, on the

average, each tax dollar given up creates at most a dollar of new investments.

Finally, even this sort of mild praise for investment incentives is called into question when the analysis takes account of the openness of capital markets in Canada. If the tax credit encourages investors' borrowing in the United States and placing the funds in Canada, the capital inflow is likely to cause some appreciation of the Canadian dollar, with consequent worsening of the current account and slowdown of economic activity in Canada. Moreover, the openness of the Canadian economy means that the effects of general investment incentives will vary with the extent and nature of foreign ownership as well as with the type of investment and the nature of the industry (Johnson and Scarth 1979). Although many aspects of the functioning of investment incentives in small, open economies have not been worked out in detail, the evidence, on the whole, is that their efficacy in such a situation is probably even less than in a larger economy, such as the United States.[9]

In brief, general tax policies affecting investment can have highly differentiated effects on industrial development. However, we know so little about the precise nature of these effects, let alone about the nature of investment decisions, that this conclusion leads to a recommendation not for more detailed and specific interventionist policies but for a more cautious and pragmatic approach to interventionism, whether specific or general in nature. Our ignorance in these matters cannot be overstressed. It is most unfortunate that the counsels of caution from almost everyone who has studied these matters in detail seem too often to be forgotten in the hurly-burly and excitement of doing something.

Tax structure and industrial structure

The excessive attention to specific and general tax incentives, about whose efficacy we are most uncertain, is matched by the lack of attention to the effects on industrial structure of various aspects of the basic tax structure. For example, the Canadian tax system provides a strong incentive for the retention of corporate profits, and has many other provisions favouring large firms, especially those that are capital-intensive (Bird 1979b). Should it so encourage large firms in order to achieve economies of scale or adequate R&D capacity? Or should it, on the contrary, encourage small firms – as do some of its other features, such as the relatively low rate on small businesses – in order to foster competitive efficiency and innovative activities? Is the existence of a national sales tax on most of manufacturing output conducive to appropriate industrial development? More generally, what is the effect on Canada's industrial organization and structure of the differing

treatment of various industries and firms that results from the interplay of tax provisions such as those dealing with capital gains, depreciation and inventories, international income flows, retention and distribution, and so on? The short answer to all these questions is that we do not really know.

The existence of the various general tax incentives (to investment, to small business, and to manufacturing) and of the many more specific ones for regional or industrial purposes (oil drilling, films, R&D) suggests that the tax system has already been used extensively, both consciously and unconsciously, as a tool of industrial policy. In the absence of any reliable information about the effects of these measures, however, a prudent country would seem well advised to make less use, not more, of tax gimmicks to achieve policy aims and hence improve the long-run well-being of Canadians. As Hulten and Robertson (1984) conclude in a review of US tax policy and high tech industries, the answer is not to introduce more biases, hidden or open, into the tax system to offset the existing ones but rather to try to back away from the whole problem towards a more neutral system.[10]

Economists analysing industrial policy keep coming up with this sort of bloodless recommendation not because they are afraid to take a chance, not because they are in love with neutrality for its own sake or believe that the market can do no wrong, but because they, unlike many other players in the industrial-policy game, have tried to trace consistently and empirically the actual and probable effects of interventionist policies. The onus of proof that the future will be sufficiently different from the past to make more selective policies a good bet clearly rests on their advocates. So far, the case they have made is not merely not proven but, on the available evidence, quite unconvincing.

Encouraging research and development

The reasons for the cautious conclusion to the previous section can be underlined by considering in more detail perhaps the most favoured of all industrial policies, the encouragement of research and development.[11] As McFetridge and Warda (1983) show, Canada provides greater fiscal incentives to research and development than any other industrial country and is almost equally generous in its nonfiscal policies. Yet, as Kotowitz (1985) demonstrates at length, the case for such extensive support of research and development in Canada is not very strong.

Nevertheless, there seems to be no end to the stream of recommendations for more and better government policies to encourage and foster research and development in Canada, often with special attention to favoured (and preselected) high-tech industries, such as micro-

electronics or biotechnology. Perhaps the best summation of the problem here is that of Lipsey in a recent talk to the Royal Society of Canada:

> This is a very emotive subject. Scientists, who, along with economists, believe in the importance of research, find it hard to accept the evidence that it is an enormous jump from the correct proposition that world research and development is necessary for world productivity growth to the dubious proposition that government incentives for more Canadian research and development will raise Canadian growth rates. I urge scientists to approach this subject scientifically and look seriously at the available evidence rather than react emotionally, jumping from the general belief in the importance of research and development to the particular belief in its efficiency under the specified circumstances in a particular country. (1983)

To be justified economically, government support of any activity must pass two deceptively simple tests. First, it must be demonstrated that market failure exists, that there are serious impediments restricting the extent to which private market decisions can attain the allocation of resources among industries and activities that is optimal from a collective point of view. Second, it must be shown that government can do better.

With respect to research and development, a major market failure clearly arises from the 'public goods' character of information. Its use by one party does not diminish its availability or its usefulness to others. Therefore, the private benefits accruing to an innovator fall short of the social benefits. Hence, the incentive to invest in the creation of information is reduced. The result is suboptimal investment in research and development by private participants in the market.

This problem is, of course, not unique to Canada, although some analysts suggest it may be more acute here than in other industrialized countries of the West, particularly for research and development in manufacturing. Although, as Palda and Pazderka (1982) demonstrate, the data generally used to support this conclusion are not very persuasive, let us assume that Canada does indeed have a particularly low level of R&D for high-tech manufacturing.

The policy implications of such a situation depend upon its cause. Does the Canadian economy have structural and policy aspects that make private R&D unattractive relative to its social value? If so, can these aspects be remedied? Or does the low level of R&D reflect a low social return to such investment as a result of an inability to appropriate its benefits or a lack of comparative advantage in R&D? If the latter is the

case, is the indication that R&D intensive industries will not grow or even survive in the absence of heavy support? That is, if Canada does not have a comparative advantage, will high-tech industries vanish without significant government support and protection? Does this mean Canada has no future in the modern world? None of these questions is easy to answer.

Proponents of further government encouragement of R&D in Canadian industry generally base their argument on three assumptions: (1) that R&D is a major contributor to growth in general and to the growth of specific high-technology industries in particular; (2) that firms that do R&D usually expand and prosper at the expense of those who do not; and (3) that raising R&D expenditure increases receptiveness to technological advances and, therefore, the rate of diffusion of new technology, with the ultimate result being faster industrial growth.

Each of these assumptions requires examination. As Kotowitz (1985) demonstrates at length, the evidence in support of each is hardly conclusive.

R&D and growth

The best conclusion from the available evidence seems to be that the amount of R&D conducted within any individual country has little effect on either its productivity growth or its economic growth in general. Although there is better evidence of a relationship between R&D and growth in specific industries or sectors, at least in the United States, the direction of causality is far from established. Industries that are particularly receptive to innovation may tend to grow most and, therefore, to attract a relatively large amount of research and development. Moreover, various studies (for example, Scherer 1982) suggest that the forces of competition often prevent firms from appropriating the gains of product innovations, most of which accrue to the industries using the products or to final consumers. In contrast, process R&D, whose results are usually used within the firm, is more likely to lead to significant increases in productivity for the investor. Yet as Scherer (1982) points out, most industrial R&D (about 75 per cent) is product, rather than process, oriented.[12]

Many of these studies have deficiencies of method and data (see Kotowitz [1985]), but one conclusion seems inescapable: the level of R&D expenditures in a country does not have a decisive effect on its growth rate (see also Palda 1984). Although the evidence does suggest some relationship in the United States between the growth of specific industries and their R&D, the skimpy evidence available for Canada does not even point to such an association, let alone causation.

That the link between Canada's R&D and its pattern of industrial growth seems weak is not really surprising. The rate of industrial growth depends in part on the pool of innovations available to a given industry, wherever they are generated. For industries in a small country, such as Canada, most of the innovations adopted by industry are almost certain to originate outside the country. The rate of productivity growth in Canadian industry is, on the whole, more affected by technological investment elsewhere than by R&D performed specifically in Canada.

R&D and competitiveness

The second argument is that firms that do R&D grow at a faster rate than firms that do not. This argument is usually said to be particularly applicable to the technologically intensive industries, in which industrial growth is concentrated and in which most major innovations originate. If the statement is correct, low R&D by Canadian firms in these industries is bound to lead to a weakening of their position relative to similar firms in other countries. And since these industries are those that one expects to grow fastest, such a loss of competitiveness is certain to result in a decrease in the rate of general industrial growth. The remedy usually proposed is to strengthen the firms in such 'growth' industries and to encourage them to perform more R & D so as to be able to hold their own in international competition.

Canada's current export structure is indeed concentrated in industries that spend relatively small amounts on R&D. Daly and Globerman (1976), for instance, find that the industries in which Canada has a comparative advantage (that is, in which exports exceed imports) are less technologically intensive than others, as measured by the ratio of professional and technical employees to all employees. However, they find no indication of any relationship between relative competitive advantage and technological intensity. Indeed, Caves, Porter, and Spence (1980) find that R&D intensity in Canada actually correlates negatively with profits, particularly in industries dominated by Canadian firms. They conjecture that this phenomenon appears not because R&D is intrinsicially unprofitable but because for these firms, it is mainly defensive, reflecting their vulnerability to foreign competition.

On the other hand, a recent study of innovation in five Canadian industries undertaken by the Economic Council of Canada (De Melto, McMullen, and Wills 1980) shows that a large proportion of the products originally developed by these industries ended up being exported. Since these observations are restricted to a relatively small number of successful Canadian innovations, one cannot infer from this evidence alone that R&D is important as a determinant of exports. Nevertheless, it may

indeed be true that firms in technologically intensive industries lose competitiveness if they perform little or no R&D. This tentative conclusion does not imply, however, that Canada needs to compete internationally in major innovations leading to significant market positions worldwide – a task that would require enormous resources in relation to normal corporate size in Canada. Rather, to the extent that Canadian firms restrict themselves to local or specialized international markets, they may be successful despite a low level of R&D in absolute terms or even relative to other firms in the industry. The recent ECC study of successful innovations (De Melto, McMullen, and Wills 1980), for example, concerns very modest levels of R&D expenditure (a median of $260,000 in 1978) and relatively small sales and export values (median values of less than $1 million and $0.5 million respectively in the same year).

Many Canadian firms operating in high-technology areas more or less fit this mould, supplying either local markets or a specialized niche in export markets (Caves, Porter, and Spence 1980). In the electronics industry, for example, most firms are small and either sell to the domestic market or offer custom-made chips and system designs internationally but do not compete in the production of hardware such as semiconductors, integrated circuits, mainframe computers, and consumer products (Cohen, Rubin, and Saunders 1984). Caves, Porter, and Spence (1980) argue convincingly that this pattern reflects appropriate comparative advantage in a small, open economy in the presence of product differentiation, economies of scale, and the advantages of market proximity (which include low transportation expenses, and especially marketing advantages). The role of research and development in such a context is simply to facilitiate product innovation in order to ensure competitiveness, particularly for firms that fill a specific niche in export markets.

To repeat, the empirical and theoretical evidence does not support the conclusion that firm success is universally dependent on R&D intensity, even in technologically intensive industries. Some minimal activity is probably necessary for survival and expansion in such industries, but there is no evidence that more would be be socially profitable. The level of R&D required appears to be a function of the relevant market structure and product characteristics. To the extent that Canadian firms are restricted to filling a narrow niche in differentiated product markets, imitative kinds of innovation, which usually require only low R&D investment, appear most likely to be successful. Of course, this pattern has some exceptions – such as the telecommunications industry, in which Canada is a world leader and the largest firm, Northern Telecom,

accounts for a major share of industry shipments – but such cases are now and are likely to remain very much the exceptions.[13]

The problem of innovation

There is ample evidence that Canada lags behind the United States and possibly Europe in the diffusion of new innovations (Daly 1985; Palda 1984), but it does not follow that such lags will cause the country to fall farther and farther behind its competitors. Such lags may help to explain the lower level of productivity in Canada relative to that of the United States, but they do not mean Canadian industry will fall increasingly behind unless the rate of diffusion falls over time. By the same token, a faster rate of diffusion of new innovations would clearly improve the general level of productivity in Canada relative to that of the United States once and for all, but it would not cause a continuous improvement in the relative rate of productivity growth, except during the adjustment period.

To the extent that the rate of technological progress is accelerating in any particular industry, however, failure to adopt the new technology relatively quickly can lead to a situation in which Canadian producers increasingly fall behind their foreign competitors. It has been argued that this is precisely the case in technology-intensive growth industries and that, therefore, the Canadian share of these industries is bound to fall in the absence of government protection. Unfortunately, the evidence about the diffusion of innovations in Canada is extremely sketchy. We simply do not know whether the rate has been accelerating or decelerating, relative to that in other countries.

In general, the only conclusion that one can plausibly reach on the evidence at hand is that no one has convincingly established a causal connection between the amount of R&D performed in Canada and the degree of competitiveness and profitability of Canadian industry in general or of high-technology industry in particular. Clearly, many Canadian industries do profitably perform a considerable amount of R&D (with substantial public subsidy), but it is not clear whether further subsidized increases in such investment would be productive at the margin. Even if the social benefits of growth in these industries exceed the private benefits, it is not certain that increased R&D is the best way to stimulate such growth.

The case for government support

Since the theoretical and empirical validity of the customary arguments is questionable, the general case for increased government support of

research and development must rest entirely on the discrepancy between the social benefits to Canada and the private benefits to the investors – that is, on the externalities conferred on fellow Canadians by investors in R&D as a result of the public-goods characteristic of innovations. The evidence on the excess of the average social rate of return over private returns is quite strong for R&D in the United States (Mansfield et al. 1977; Scherer 1982), but Canada's smaller size gives rise to an important difference (Berkowitz and Kotowitz 1982). Most users of product innovations that originate in the United States, whether other producers or ultimate consumers, are likely to be US residents. This is not necessarily the case in Canada.

There is a great difference between Canadian innovations aimed at domestic markets and those that are export-oriented. Because the excess of social over private benefits arises mainly from the inability of the innovator to appropriate the benefits of the innovation in the form of higher product prices, most benefits from product innovation accrue to those who use the products. In the case of exports, the users are obviously foreigners. So for these goods, the domestic social returns and the private returns are likely to be fairly close. Thus, unless the Canadian government is, for some unclear reason, concerned about the social welfare of foreign residents, the public-goods argument offers little justification for support to R&D for export goods.[14]

Most R&D for Canadian firms that sell in the domestic market consists primarily of adaptations of innovations to meet domestic needs or innovations produced domestically because of locational advantages. Thus it is such lowly, imitative R&D – not the original, export-oriented R&D so highly touted by many proponents of positive industrial strategy – that is most likely to yield net social benefits in Canada (as it did in Japan).

The magnitude of optimal public support for even this sort of R&D is obviously not uniform. In principle, therefore, it would be desirable to provide it in a discretionary manner. In practice, however, government is unlikely to possess the requisite extensive information needed to apply differential rates of support optimally. (Indeed, the information and judgement necessary to apply a discretionary policy in an efficient manner can probably never be available to governments.)

On the whole, however, relatively competitive industries that find imitation easy and that serve mainly Canadian customers should, in principle, yield the highest returns to government support of R&D and so should receive most support. To reduce duplication of effort and to achieve the greatest benefit from scale economies, the government can also direct its support to industry-wide co-operative research efforts. (Such efforts may, of course, occur without public support and initiative,

but they involve difficulties of organization and fund-raising, owning to the ease of 'free riding' that government involvement can often mitigate.) Since the danger that industry-wide organizations will become co-ordinators of cartels is insignificant in competitive industries,[15] such government subsidies should yield benefits to consumers and to society as a whole (Kotowitz 1985).

In contrast, Canadian governments' current support for R&D is not likely to produce the best possible results because it mainly comprises general tax concessions (to firms and individuals) and the patent system. Both these programs too often transfer resources to industries in which the excess of social over private returns is relatively small and also, in effect, subsidize foreigners at the expense of Canadians.

Support for major innovations

If policy makers find a case for government support of major innovations to establish a strong market presence for Canada (or Ontario) in specific high-technology growth industries, general assistance programs such as tax concessions and general R&D subsidies are obviously not likely to be effective. Mansfield and Switzer (1985), for example, find that, on the average, each dollar of Canada's current generous R&D subsidies probably induces at most $0.40 of new R&D. The effectiveness of government action would clearly be enhanced if support were concentrated on specific industries and firms, particularly on those that are sufficiently well established to compete on their own merit – that is, those that have a head start in knowledge and market position and can, therefore, take advantage of the support. The optimal policy to reduce wasteful duplication in this case would thus seem to be one of a limited commitment of public funds, together with, in effect, an allocation to designated firms of property rights in special R&D areas.

In practice, however, this approach would encounter several problems:

- Government commitment by a country as small as like Canada (let alone Ontario) is unlikely to deter potential rivals and hence is unlikely to achieve its aims.

- As has been stressed before, governments are poor losers. Unlike private firms, which have no option but to cut their losses and depart, governments tend to stay in the game long after their champions have lost. The political need to justify past actions increases the usual pressures on government to support ailing industries. Today's positive industrial policy too often contains the seeds of tomorrow's negative one.[16]

- With even a limited interventionist policy, government must become actively involved in industry. It must select specific firms on which to concentrate its support (or even create such firms directly, by merger, or as a co-operative venture of several firms). Governments seem unlikely to have much expertise in making wise choices in these matters, especially since political considerations of the pork barrel or regional-development variety are likely to intrude upon commercial decisions. For reasons such as these, Peacock (1980) suggests that countries such as West Germany, which have supported R&D in more general ways, have been more successful, despite the apparent waste of this approach, than those such as Britain, which have closely and directly involved public authorities in guiding the R&D effort.

A policy of limiting the number of potential competitors for major innovations through a government commitment to support original R&D efforts in selected industries clearly has some merit in principle. In practice, however, such a policy, like most specific micro industrial policies, is likely to prove costly and ineffective, particularly in a small country such as Canada.

ADJUSTMENT POLICIES

The central ingredients of industrial policy for Canada or Ontario, as presented to this point, are sensible macroeconomic policies, structural policies that have been carefully reviewed for their effects on industrial development, and perhaps some very limited positive interventionist policies. The final kind of government action needed is perhaps the most important of all, although it has been neglected not just by advocates of industrial strategy but also by most economists as well as by governments at all levels.[17]

Growth means change, change requires adjustment, and adjustment is always uncomfortable and costly for those directly affected by it. In Canada, such people frequently turn to government for relief, and too often they receive it in the form of measures that block rather than assist change. Too seldom does government facilitate the transfer of resources – people and capital – out of dying industries into growing ones. Yet there can be no successful industrial policy without such adjustment, and there is, therefore, no role more important for government than the direction of aid to industries, firms, regions, and – above all – people in such a way as to facilitate adjustment. By this standard, Canada and Ontario – like most industrial economies (Lindbeck 1981) – are not doing well.

The case for government intervention

Industrial adjustment to changing relative prices is generally essential for economic efficiency, which requires the least-cost production of what consumers demand. When the world price of a good falls, those Canadian and Ontario producers with higher costs are forced out of business, and the workers and other resources these firms had used shift to other industries. Action to protect the firms, through direct subsidation or through trade policy, reduces total Canadian welfare because high-cost Canadian producers continue to supply the good in question even though lower-cost supplies are available through imports. Alternatively, letting the shift occur increases overall welfare.

Problems arise, however, because industrial adjustment usually takes time. Resources, especially human resources, often cannot shift overnight from one industry to another. Thus, adjustment may involve paying the temporary cost of unemployment in order to receive the benefits of greater long-term efficiency in the future.

The case for government intervention in economic adjustment has both a political and an economic dimension. Economically, the amount of time required for an adjustment in part determines its net benefits; an adjustment that is extremely slow and produces a great deal of unemployment may not be worth making (Rees and Forrster 1981). Thus, the economic case for public intervention in this process is that governments can often reduce the costs of adjustment as particular industries decline and expand.

The political view of the adjustment process is quite different. Where the economist, unconstrained by political considerations, looks to the future net benefits, governments, which must face re-election at regular intervals, understandably place far more emphasis on the initial unemployment. Since losers do not like to lose, they naturally turn to the political system to resist such change, and that system is likely to respond to such demands (Hartle 1980). And as Lindbeck says, 'It is easier to lobby for the protection of existing jobs for known persons in known firms than to lobby for the creation of new .jobs for unknown persons in unknown firms' (1981, 7). In other words, the political case for industrial policies is based on the pressure for government to do something to aid people who are in economic distress through no fault of their own. And as Courchene puts it, 'The issue is not really whether government is going to intervene. . . [but rather] . . .the form that the intervention is going to take' (1980, 569-70).

Given these political facts, the economist's proper role seems to be to design policies that do the most good or the least damage. Counselling complete inaction, as economists sometimes do, may lead to govern-

ment's ignoring the advice and choosing the worst of available activist policies. When the politically acceptable choice is between adjustment tempered by discretionary policy and no adjustment at all, it is simply unproductive to lecture governments on the beauties of complete inaction.

This point is so important as to bear repeating. Governments are not going to revert to a neutral 'let the market do it' stance towards adjustment, no matter how persuasive academic economists find arguments about refraining from choosing which firm or which industry gets what. The heart of the current economic problem is the need for adjustment to continuous and increasingly rapid economic change and the difficulty of that adjustment in times of declining growth. As Hartley (1979) notes, industrial policy has to face the puzzle of how to cope with and respond to uncertainty – something that neither economists nor governments are very good at.

Change is, in fact, the lifeblood of industrial policy making. The plethora of policies described earlier in this study would not have grown up in a static economic environment.[18] Democratically elected governments usually defend their micro interventionist policies by reference to economic exigency – an argument that surely carries some weight to the extent the economic change was unanticipated (Green 1984). Legislatures, however, usually ignore the distinction between economic change that could and should have been anticipated and that that could not. They focus on what actually happened, not on what might have happened if people had been more sensible and intelligent.

Should aid go to workers or to firms?

Although the most publicized government adjustment (more usually, nonadjustment) policies relate to firms (bailouts and the like), by far the most important intervention is with respect to people in their role as workers. Economic analysis usually puts a premium on the movement of resources, including labour, to seek out their most productive (and remunerative) uses. Presumably, the more rapid economic change, the greater the pressure on resources to move from one employment to another. But mobility, geographic or occupational, is both costly and time-consuming. Even in the absence of inefficient government policies, certain economic changes in recent years may have contributed to the reduction of mobility in Canada and thereby increased the demand for protectionist industrial policies – a demand that the political system is usually glad to satisfy.

In particular, as Green (1984) stresses, the growth and changing composition of household wealth has made human-mobility responses to

economic change difficult and potentially unprofitable for many people. The reason is that household production functions increasingly involve what Green calls 'fixities', forms of wealth that are nonportable, nontransferable, or both. The largest proportion of many households' nonhuman wealth, for example, comprises houses and employer pension plans. Neither is portable; pensions are usually nontransferable, and under certain conditions not infrequently found when a plant closes, particularly in a one-industry town, a house may be difficult to sell without absorbing a large capital loss. In addition, human capital is not transferable and, where seniority and tenure rights are involved, is typically nonportable as well. Faced with a loss of such important assets as a result of moving, a household may rationally decide to stay put, continuing to produce services so long as it can stave off bankruptcy.[19]

This phenomenon of fixities' restraining labour mobility partly helps to explain the frequency with which industrial assistance is demanded (and received) by labour-intensive firms and industries that have a high ratio of variable to fixed costs and physical capital composed primarily of portable machinery and equipment. It is not necessarily the firm that finds adjustment so difficult but rather the households that supply labour services to the firm and have capital-intensive production functions. The classic examples are the clothing and textiles industries, in which the firms are often located in towns that rely mainly on one or a very few major employers (Jenkins 1980). No matter how little economic sense protection makes, the pressure of hundreds of relatively immobile voters can command significant political response.

Given the problem of fixities combined with other aspects of modern life, such as stagflation, external economic shocks, rent-seeking and rent-maintaining behaviour, and province-building and similar balkanistic policies, it seems safe to say not only that we will have industrial policies with us for years to come but that we *should* have some such policies – geared to making sure that downward adjustments in declining sectors are possible. Many existing industrial policies, however, block such adjustments, thus perpetuating the problem. It is not easy to reconcile the fundamental conflict between adjustment and assistance: if the government provides assistance to people in a declining industry or sector, it becomes easier for them to stay in that industry or sector – that is, to avoid adjustment. Nevertheless, the evidence suggests that unless we try to overcome this hurdle, we will get nowhere.

The nature of assistance to workers

Every policy produces gainers and losers, and economists are really in no position to choose among them.[20] If government compensates, bails out,

or protects actual or prospective losers from economic change, moral hazard exists for economic agents, who may take fewer steps to avoid being losers. They have an incentive to accept unwarranted risks, to make inefficient choices, and to avoid efficient (to society) but costly (to them) resource allocations.

Nevertheless, as Saunders (1984) shows in detail, a decision to allow an industry to contract (or expire) generally calls for adjustment assistance to the affected workers (in addition to the basic system of unemployment insurance[21]). For example, because of the externalities associated with the creation and persistence of unemployment, it is often appropriate for governments to facilitate re-employment by means of subsidies to geographic and occupational mobility (Glenday, Jenkins, and Evans 1982) The short-term costs of such programs, if properly designed, should be exceeded by the social benefits associated with increased productivity and the reduction of the probability of the workers' becoming unemployed again. Furthermore, mobility assistance is well suited to the desire for a fair distribution of the burden of layoffs (Saunders 1981). The individuals likely to suffer the most from mass dismissals are those who lack skills, those whose skills have become obsolete, those who have strong attachments to a small community – in other words, the people who have the least mobility in the labour market. Thus, subsidized mobility both improves efficiency and directs aid to those who need it the most.

Many workers also require retraining for occupational mobility. The well-known imperfections in the market for training (see Saunders 1984) may thus require adjustment measures, such as training loans to individuals, grants or wage subsidies to employers (and/or individuals) for on-the-job training, and grants and living allowances to individuals for institutional training, as well as efforts to collect and disseminate labour-market information (including forecasts of future conditions) so that displaced workers can be directed to training for occupations with the greatest returns.

Even a program that covered all the costs of geographic moves and of retraining would not completely compensate the displaced worker for his or her losses if they include the capital losses on real estate and other fixities stressed in Green (1984). In clearly identifiable cases of this sort, the adjustment-assistance package should perhaps include additional compensation. Also, compensation payments may have to err on the side of generosity to ensure that risk-averse workers regard the scheme as acceptable.

Finally, as Glenday, Jenkins, and Evans (1982) convincingly argue, it is important that the size of any such settlements be independent of the

subsequent employment experience of the recipients. Compensation programs that tax back part of the benefits if the worker is quickly re-employed create a disincentive to seek such employment and hence create their own inefficiency. On balance, despite the moral-hazard problem of any program that shields individuals from the results of risk, the case for generous labour compensation remains strong. Without such programs, many efficient economic adjustments are politically unfeasible.[22]

In concluding this section, we must emphasize that it is essential to design and implement the best possible policies to assist declining industries and especially their workers in adjusting to change. This difficult task often requires specific government aid to specific areas – a process always fraught with difficulties and danger. The key point, however, is that any such assistance should always be tied to change, not, as is now too often the case, to nonchange. An active government role along these lines is a necessary support and complement for any successful industrial policy in a country such as Canada or a province like Ontario.

CONCLUSION

Although it may be arguable whether Canada – given the fragmented and vulnerable nature of its polity and its economy – will ever be able to attain an ideal set of framework and adjustment policies, what is not arguable is that without good policies in these respects even the most carefully thought-out interventionist plans are unlikely to produce the benefits their proponents suggest. Moreover, the probability of achieving success with any interventionist strategy is less than the probability of getting the market to do its job of detailed resource allocation, both by ensuring that the right signals are transmitted and by making the necessary adjustments more acceptable socially. Governments in Canada have their work more than cut out for them in doing what they must do, what no one else can do, and what, in too many instances, they have not done well to date.

In principle, then, Canada – and Ontario – must indeed have an industrial policy. Moreover, getting to the needed macro industrial policy from the congeries of specific and conflicting policies that now exist will be a politically difficult task. If it can be achieved at all, it will take a lot of time and effort. It is critical not to divert these efforts into an attempt to chase or lure technological will-o'-the-wisps with baskets of taxpayers' money. Such attempts will probably fail, will certainly be costly, and will in all likelihood obscure the most fundamental problem in Canadian industrial policy today. That problem is not how to pick winners but how to dump losers (including the failed winners of

yesteryear) without destroying the social and political unity of the country.[23] Grappling with this central problem of industrial adjustment may not be intellectually glamorous or politically attractive. It is, however, a much more important task for would-be industrial strategists in Canada to undertake than the more favoured pastimes of devising ever fancier protective subsidy schemes for the favoured few or playing guessing games with the multi-dimensional future of industrial applications of science and technology.

The authors in this series have made this point and many crucial related ones before. Unlimited support for R&D is not an unqualified benefit, particularly not in a small, open economy (Kotowitz 1985). No case in either logic or fact supports the view that any particular industrial structure – for example, emphasis on preidentified high-value-added sectors – is better for Canadians in any meaningful sense than a different structure would be (Watson 1983b). There are also strong reasons to think that government macroeconomic policies are extremely influential in shaping industrial structure, often in undesirable ways (Milne 1985) and that government adjustment policies are both necessary and all too often inadequate (Saunders 1984; Green 1984).

A common response to arguments such as these is to attribute them to economists' allegedly blind belief in the free market. As its detractors often note, economics (like other social sciences) may not be completely scientific in every way. Nevertheless, the conclusions of a large number of theoretical and empirical studies point overwhelmingly in a direction precisely opposite to that suggested by most interventionists, whose beliefs sometimes seem to be little more than a curious mixture of technological boosterism, defensive nationalism, and blithe ignorance of almost everyting that has been painfully learned over the years about government policy making in a democratic state.

In short, the scientific position – that is, the one supported by reason and systematic evidence, rather than by faith and selective example – is that neither Canada nor Ontario should adopt a positive, interventionist industrial policy. On the other hand, both jurisdictions should pay more attention to developing appropriate framework and, especially, adjustment policies than has been the case to date.

There is more than enough work here for all who would see us safely through today's travails into the brave new world we are so often told is rushing upon us daily – work, moreover, that does not require government to attempt the futile tasks of trying to foretell that world's precise shape or to manage a complex, open economy so as to direct resources into chosen sectors without creating worse problems elsewhere.

NOTES

1 In some instances, however, regional policy may be justified as part of the essential glue that holds this diverse country together (Bird 1985).

2 Further examples of this interdependence, as well as details of the model and simulations, may be found in Milne (1985).

3 For a discussion of industrial policy in Japan, see Allen (1979) and Trezise (1982). West Germany's policies are surveyed in Merden (1982) and Owen-Smith (1979).

4 Such a depreciation is not merely a pipedream, invented for our exposition. Several analysts have recommended depreciation of the Canadian dollar.

5 These results assume that the industries operate throughout the projection period with technology unchanged from 1977. This assumption, of course, limits to some extent the significance of the findings.

6 Portions of this section draw on unpublished work by Paul Davenport and on Milne (1985).

7 This line of thought has recently been further developed by Harris and Cox (1983) and by the Macdonald Commission (1985).

8 For example, the Canadian Institute for Economic Policy (1983) recently suggested, among other things, a five-year tax holiday on export profits in excess of those obtained in some base period. The Canadian Federation of Independent Business (1983) proposed ten tax changes to facilitate increased financing of small business. (The government has since responded to some of the ten.) More broadly, the Royal Commission on Corporate Concentration (1978) suggested the abolition of both the capital gains tax and the tax on corporate retained earnings to stimulate business activities in general. The introduction in the 1985 federal budget of a limited exemption of capital gains presumably responds to sentiments similar to those underlying the Royal Commission recommendation – and is similarly subject to the strong criticism in Bird (1979b) of the ineffectiveness of such measures.

9 For further discussion, see Hartle et al. (1983) and Brean (1985).

10 See also Fullerton and Lyon (1985), who find that in some respects the US system is – surprisingly – roughly neutral among industries.

11 This section draws heavily on Kotowitz (1985).

12 Moreover, most product R&D is performed in industries producing industrial capital goods products (45 per cent) and industrial materials products (21 per cent), most of which are sold to other industrial users (Scherer 1982).

13 For a detailed critical discussion of the case for supporting such leading firms, see Kotowitz (1985). As noted there, Canadian firms may well be at a disadvantage in entering certain industries in the absence of government support for such ventures. The small size of the Canadian market means that Canadian firms, on the whole, tend to be relatively small and to lack the financial, technical, and marketing resources necessary for success. Moreover, because many foreign firms in such industries are supported heavily by their governments, the expected private rate of return to Canadian innovators is likely to be very low; thus, even firms that possess some competitive advantages may be reluctant to enter the race unless supported by government. But unless such support significantly increases the chances of winning – which seems unlikely for reasons Kotowitz sets out – it will probably not yield a long-term social return. (Of course, some subsidization of the industries in question may be warranted for reasons of market imperfection.)

14 Indeed, as Raynauld (1983) stresses, there is little case for export subsidization in any case (except in the eyes of the mercantilists, who seem always to be with us).

15 The exception occurs when government is willing to support a cartel. Canadian agriculture provides a classic example.

16 Palda's (1984, 110) description of the Canadian nuclear industry as 'a classical declining industry; infant to geriatric in 25 years, like a comet levaing a trail of negative cash flow behind' typifies government's problems in intervening in industrial development at the micro level.

17 This section draws on unpublished work by Paul Davenport, as well as on Green (1984) and Saunders (1984).

18 No doubt even in the absence of economic change some instances of direct government intervention would be observed, reflecting, for example, rent-seeking activities or market failure.

19 Green (1984) notes the parallel to the rational short-term behaviour of a firm whose fixed costs are high and whose variable costs are low.

20 In principle, under the most socially beneficial economic policies the beneficiaries would willingly and fully compensate the losers. In practice, such compensation is rarely envisaged, much less offered, in part because any attempt to do so might involve transaction costs so substantial that the net benefits of many programs would be greatly reduced, if not eliminated (Quinn and Trebilcock 1982).

21 The present system of unemployment insurance itself needs to be altered in order to facilitate rather than block adjustment: see Kesselman (1983) for some relevant discussion.

22 Assistance should not be provided, however, if the economic hardship could clearly have been anticipated and avoided by the individuals affected. This situation is rare for workers laid off from declining industries, apart from those who accept employment in a declining firm shortly before its demise – a problem that could be dealt with by imposing a minimum service requirement for eligibility for adjustment assistance.

23 As Katzenstein (1985) emphasizes, the key to successful economic adjustment in a small, open economy lies in the development of a political structure that makes such adjustment possible. Consensus decision-making, rather than adversarial politics, is the key to the relative success of such small European states as Austria and Switzerland, he notes.

5
Industrial policy in Ontario

> Is it better for economists to tell each other things about industrial subsidies that no one else is interested in, or to try to say something rather less 'pure' that might actually improve public policies for the better?
>
> Jack Wiseman, 'Is there a logic of industrial subsidization?', 1981

> Economic policy is random with respect to the performance of the American economy, but, thank God, there isn't much of it. What makes the economy function well is that 100 million people get up every morning and go to work, doing the best for themselves that they can. As long as that happens, the economy will be strong enough to resist policy errors, within a considerable range, and provide time for corrections.
>
> Herbert Stein 'How economists get their stripes', 1985

The answer to the question posed in the first quotation above seems clear: economists concerned with improving public policy should try to structure their contributions to the debate in such a way that they are heard. Unfortunately, far too much of the recent discussion in Canada has degenerated into a name-calling debate between proponents of what have been labelled the *laissez-faire* and the *dirigiste* approaches to industrial policy (Beckman 1983; Morici, Smith, and Rea 1982). Too often, people skeptical about the usefulness of most government interventionist policies are accused of being blind believers in the doctrine of 'monodiabolism, and the government is the devil' (Olson 1982, 177), while those seeking more coherence in Canada's present hodgepodge of

industrial policies are accused of the equally heinous crime of technological determinism.

The two sides appear more evenly balanced in the public mind than the evidence discussed in this study – which overwhelmingly supports the skeptics – suggests. Olson notes, 'Vivid or dramatic examples tend to be given more weight as evidence than they deserve, whereas extensive statistical evidence tends to be given less than is justified' (1982, 96). Arguments for policies conducive to improved economic efficiency are simply not very glamorous compared to pleas for Canada to launch out 'into a brave new world of Dash-8s, Telidon, optic films and microchips' (Newman 1983, 44). Or perhaps economists are seen as yesterday's men, using outmoded ideas and obsolete data to appraise the vistas of the unknown but undoubtedly splendid world that lies before us.[1] The age of futurists, holists, and utopians has arrived.

At the risk of being overdramatic, one sometimes thinks there is no end to the ceaseless search for a quick fix for society's ills – whether it be Theory X, Y, or Z, small (or big) is better, some variant of Couéism (every day in every way, we're getting better and better), the *Book of Five Rings*, or whatever. The snake-oil and patent-medicine salesmen bring forth as conclusive proof to the rubes in the audience Mr. A with his newly grown head of hair, the 'latest Xerox', Japanese quality circles, French plans to install 3 (or 30) million interactive videotex terminals by 1992, the miracle allegedly created by low taxes in Hong Kong, or whatever. The pedlars of magical nostrums have always been with us and have always found gullible audiences. At this very moment, probably as many world leaders are consulting their horoscopes as the latest economic reports!

Despite the glamour of such approaches the position taken here is that there is merit in the economist's plea for more attention to efficiency despite the chorus of shouts for inefficiency in order to achieve this or that worthy goal. Of course efficiency is not all that matters, but it *does* matter – a lot. Resources are scarce, and greater efficiency in their use means more can be done with them. Favouritism to special-interest groups, no matter how finely cloaked in the rhetoric of national interest or job protection generally reduces efficiency, incomes, and growth.

We thus argue against most government-directed attempts at aid to specific industries and firms, whether in the form of a coherent positive interventionist strategy or of the incoherent protectionism that makes up much of current industrial policy. This is not to say, of course, that the magic market can do it all. On the contrary, there is no simple solution, market or government, to the many complex problems that are lumped under the label of industrial-policy concerns. Blanket condemnations of all government actions do as great disservice to useful policy

discussion as vague generalizations that the government should pick winners. Both result in neglect of the detailed questions that matter in policy terms. Not whether intervention, but precisely what interventions? Where? What criteria are to be used to choose winners? How is performance to be monitored to tell if firms or industries are winners or losers? How exactly are losers to be abandoned? Who is going to do all this? Why should they be expected to do it? And at whose expense will it be done? None of these questions are easy. Unfortunately, at present they have hardly been asked, let alone answered, in Canada.

These matters obviously cannot be resolved here – certainly not to everyone's satisfaction. Instead, the task undertaken in this final chapter is simply to consider what seem to be the main lessons emerging from this study for industrial policy in Ontario. What can/should/must the government of a small, open, non-sovereign state do about its industrial structure in an environment characterized by increasing pressure from abroad, a declining position within the nation, and apparently shrinking governmental resources and credibility?

The basic answer to this question has already been indicated throughout this study: the government should focus primarily on framework and adjustment policies. The balance of this chapter develops more detailed thoughts on appropriate principles for provincial industrial policy. We make no claim for completeness or even for a tidily outlined presentation. These are simply the points that emerge most clearly after consideration of the evidence.

HIGH-TECH INDUSTRY AND EMPLOYMENT IN ONTARIO

Some readers may feel that this study has dealt quite enough with high-technology industry. Yet it seems worth exploring in a bit more depth because it is clearly a subject of vital interest to Ontario, Canada's industrial heartland, and because we have heard so much about the 'need' for expanding jobs in this provincial sector.[2]

Two recent newspaper quotes may serve to suggest something of the flavor of the debate:

> National economic planning is becoming a necessity in order to avoid the social dislocation which the technology can cause, to ensure that improvements in productivity and wealth result in improvements in the quality of life of working people. (*Globe and Mail*, 1 January 1983)

> Microelectronics – in North America as a whole, not just Canada – is no different from textile manufacturing, automobile assemb ling and television production, in that none can compete with the

> low wages in Asia and that region's ability to produce high volume goods, while maintaining quality standards and economies of scale. (*Financial Times*, 28 March 1983)

The first quotation – from an article tellingly headed 'The chip: killing jobs and creating peasants' (Speirs 1983) – reflects a gloom-and-doom view of the general effects of today's (and tomorrow's) technology on employment. The second (Yonson 1983) suggests that although chip-making does mean jobs, they are not likely to be found for Canadians. The evidence, such as it is, generally supports the second but not the first of these positions.

As Browne (1984) notes, the implications of technological progress for the level of employment are far from clear: on balance it may go up, down, or remain the same. Moreover, as Dungan and Younger (forthcoming) stress, the employment effects of technical change depend heavily upon the nature of the accompanying macroeconomic policies. What *is* clear is that the nature of employment will change. The elimination of a lot of dull, boring, at best semiskilled jobs, is not a disaster but rather the greatest freeing of human resources since the agricultural revolution of the last hundred years got us off the farms. Now we have a chance to get out of the factories too. Why should one person producing clothes or radios for fifty or a hundred people be more of a problem than one person's producing wheat or beef for fifty or a hundred? Those of us who are only a generation or two off the farm are grateful that technology has let us be stockbrokers, engineers, and professors rather than peasants. Why should anyone assume that the factory workers of today are less worthy of a more leisured, less boring existence than were the farmers of a century ago? In Browne's words:

> Even in the worst of all worlds, in which . . . output does not increase and labor input declines, technological progress still has the potential to improve most people's lot in life. That it may fail to do so is a problem of income distribution rather than technological change *per se*. . . . The potential exists for all to benefit. The challenge is to bring reality closer to potential (1984, 16).

Change is always uncomfortable. This particular set of changes, however, surely has the potential to liberate provided that those now occupying the bastions of privilege are prepared, induced, or forced to move over a bit and share the increased wealth and leisure with others. In short, long-run social efficiency, in the sense of accepting and adapting to the change that results from technological progress, requires an

adequate system of redistribution: equity and efficiency, properly understood, thus march together rather than conflict.[3]

Whether it is reasonable to look to high tech for the salvation of manufacturing employment is an entirely different question. The short answer is that it is most unlikely that enough high tech industrial jobs can be created to stem the long-standing relative decline of manufacturing employment (Brown 1983; Bird 1984a).

This prediction is not, however, a gloomy one for Ontario. Insofar as Canada has any parallels to California's Silicon Valley and Massachusetts' Route 128, they are already located in Ontario (in Kanata and along Highway 401) and are likely to stay there. In this sense, what is good for Canada as a whole is likely to be good for Ontario, in the future as in the past. If resources are developed in the east or West, if the world or US economy booms, if the level of domestic economic activity expands for any reason – whatever happens, Ontario is likely to do fairly well as a result. As noted in Chapter 4, the big gainers from technological advances are generally those who use them and perhaps those who develop them, not those who produce them. Thus, the sensible objective for the province is to be ready to increase its capacity to utilize, adopt, and develop technological innovations – in other words, to do better what Ontario already does.[4]

It is difficult to take seriously the jeremiads of the new physiocrats, who seem to venerate manufacturing as their spiritual ancestors in the eighteenth century once venerated agriculture. The world changes, and economic structure changes with it. Wise policy makers, particularly in small, open economies, go with the tide, not against it. This is not to say that Ontario has no hope of growth in high-tech employment. In considering its prospects, at least three factors seem relevant: entrepreneurship, the availability of a professionally and technically skilled labour force, and the relative cost of labour.

– Obviously, no quantitative assessment of entrepreneurship (which is perhaps the most important of these factors) is possible. The scanty evidence available, however, appears to confirm the commmon belief that most high-tech entrepreneurs start as spinoffs from established high-tech firms. Since most of the country's high-tech industry is already located in Ontario, the province seems to be as well placed as anywhere in Canada in this respect.

– Similarly, with respect to the skill level of its workforce, Ontario seems well-placed in Canada (Bird 1984a) – although its recent squeeze on postsecondary education may in the long run be harmful. The further development of, for example, graduate engineering studies at Ontario's

universities might not only keep more people with these scarce skills at home to develop and flourish but might also draw in such highly skilled labour from outside the province and the country for the greater benefit of all Ontario residents. Moreover, several of these institutions are in or near large cities, placement that US experience suggests encourages the close academic/business ties that have characterized much of the development of the high-tech industrial base everywhere in the world. Similarly, Ontario has an extensive college network for the development of technical skills. Concentrating effort and building on existing strength constitute the essence of good strategy. In the case of Ontario's manufacturing industry, this platitude translates into building up the educational and skill infrastructure in the Golden Horseshoe area, unpalatable as this conclusion may be politically.

– Finally, Ontario's labour costs are competitive, at least within Canada, since its manufacturing wages are more or less equal to the national average across a broad spectrum of industry.

In short, the prospects for the growth of high-tech industrial employment seem brighter in Ontario than anywhere else in Canada.

Nevertheless, most Ontarians are going to have to find their future livelihoods elsewhere. High tech industry is relatively important in Ontario already, but no matter how defined, it is not important as an employer (Bird 1984a), and it is unlikely to become much more important under any plausible set of circumstances. Even successful high-tech industries that are initiated in Ontario are likely, in the end, to establish their major production facilities elsewhere, for reasons of cost or of gaining access to larger markets. There simply will not be enough high tech industrial jobs to go around, and it is folly to pretend that there ever will be.

To drive this point home, note that even if all high tech employment in Canada were in Ontario and if the relative importance of such employment in Canada rose to US levels – a most improbable scenario – the resulting jobs would sop up little more than the increase in total Ontario employment from 1970 to 1980, leaving untouched the growth in unemployment over this period (Bird 1984a). Although the growth of the labour force has slowed since 1980, the inescapable conclusion is that most employment growth in Ontario in the future, as in most of the postwar period, will be in the service sector.

Increased productivity in Ontario's traditional industries including high-tech manufacturing will, of course, continue to be needed to provide an expanding export base for the province's development. The intro-

duction of innovative products and processes and the launching and expansion of new industries to replace declining old ones will be essential to maintaining this dynamic. In these respects, Ontario seems better placed than any other province in Canada to ride the increasingly tempestuous waves of the world economy – provided it neither allows its educational and skills infrastructure to be eroded by neglect or dribbled away by the functioning of short-sighted territorial politics nor follows inappropriate framework policies with respect to taxation, regulation, and so on.

Careful and conscientious policy development will be needed in all these areas, simply to keep what Ontario already has. In particular, the government must take a lead role in facilitating innovation – not directing it, but making it possible by providing trained people, supporting some research, and helping smaller firms obtain access to appropriate technology – and, especially, in making possible the industrial adjustment that inevitably accompanies growth and change.

THE BASIS OF PROVINCIAL INDUSTRIAL POLICY

As Michael Bliss perceptively says:

> It is unlikely, given the record of the past, and given the plurality of interests composing modern Canada, that there can ever be a single Canadian industrial policy. The view that there can be some kind of 'New National Policy', which solves all Canadian industrial problems, misunderstands not only our present and future situation, but, as we have seen, is based on a misreading of our past national policies. The likelihood is that policies will continue to be developed, as they were in the past, by real politicians dealing with real problems on a day-to-day basis. In the realm of industrial policy, as in so many other areas of our national life, we have to learn to live with diversity, *ad hocery*, and a certain amount of disorder. (1982, 42-3)

Exactly the same can be said at the provincial level. Provincial policy, like national policy, is subject to the vagaries of political life – not the least of which is the perceived need to respond to contradictory national policies – and to many of the same pressures. Moreover, the case for provincial subsidization of investment or research is even weaker than the case for national subsidization simply because the provincial economy is relatively smaller. There is also much less the provincial government can do to establish an appropriate macroeconomic policy, although it can, as Lindbeck (1976) stresses, use policies affecting relative prices to do more than is often thought possible. On the whole,

however, it seems clear that the basic role for provincial industrial policy lies in the area of framework and adjustment policies.

The university/business/government interface

One of the most important aspects of industrial policy in any jurisdiction is, however, almost entirely under provincial control in Canada. This is the university/business/government interface, and industrial policy makers would be wise not to overlook the need to provide it with a favourable environment.[5]

Bird and Bucovetsky (1984) discuss many linkages between industry and universities that already exist in Ontario. The first and undoubtedly the most important is the role of universities as the primary provider of well-educated personnel for the private sector. As the president of Exxon Research recently said:

> In order of importance, industry looks to higher education for: a steady supply of well-educated graduates; relevant basic science, and scientists able to offer fresh sights; and, sometimes, technological ideas and leads. (David 1982, 17)

Despite apparently widespread agreement on the importance of improving the quality and, in at least some areas, the quantity of university-trained people, most attention in recent years has been paid to the prospects and possibilities of strengthening the linkages between industrial and academic research. In a recent report of the Corporate – Higher Education Forum (1984), for example, less than 10 per cent of the text was concerned with the problems of 'brain power' as such. The bulk was instead devoted to describing, evaluating, and proposing ways to facilitate corporate-university co-operation through joint ventures, university-based interface institutes, university-based research parks and companies, and contract research.

Despite this emphasis on research, perhaps not enough attention has been paid to the often-pivotal role of *government* decisions (or non-decisions) in shaping the growth and nature of the research community in this country.

Research in Canada rests on a triangle whose three corners are government, business, and the universities, each dependent in obvious and not so obvious ways on the others. Governments fund research in the corporate sector both directly (through grants and contracts) and indirectly (through tax subsidies). In return, business presumably provides what governments want – more R&D. Similarly, and for the same reason, governments fund research in the universities both directly

(through grants and contracts) and indirectly (through the portion of the operating budget that supports research). Finally, in what is clearly the weakest link of the triangle at present (Bird and Bucovetsky 1984), business buys a small amount of direct research from universities and receives benefits not only directly from this expenditure but also from the resulting supply of trained researchers and, to a lesser extent, from the knowledge generated from government-financed university research.

At the moment, government support of private-sector research seems to have no strong bias for or against corporate-financed university research. However, the federal government's recent Wright report on technology development (Canada 1984b) recommended tilting the system to favour university research, having the federal government:

- Give companies a 50-per cent tax credit for R&D performed on their behalf by universities.
- Pay the universities themselves a 25-per-cent bonus based on the value of their industrial-research contracts.
- Most importantly, pay the full cost of all research it sponsors at universities.[6]

The merits of the first two proposals are arguable, but the third is clearly desirable: indeed, universities should charge both industry and governments for the full cost of research carried out on their behalf. Moreover, governments should stop trying to beat their own rules to avoid paying even the minimal indirect costing now allowed on research contracts, as is all too common. Another policy change that would facilitate the establishment of sound industry/university research relations would be the removal of some of the present procurement rules favouring contracts with profit-making as opposed to nonprofit researchers.

Unless both universities and governments make some changes in these respects, even successful efforts to attract more private-sector dollars into supporting university research are likely to turn into financially losing propositions. As McPherson says:

> It is time to recognize the negative impact on their position, when universities claim to be under-funded, under-staffed, under-built, and under-equipped, while at the same time acquiescing to their clients' insistence that they maintain a pricing policy on contract research which can only be justified by the assumption that most components of indirect costs are already paid for, by their financially sound, well-staffed, well-equipped institutions. (1983, 29)

Increased government support through matching grants – as announced in Ontario's 1984 budget and proposed by the recent federal task force (Canada 1984b), for example – combined with policies to cover the full costs of government research grants and contracts would lead to more and more adequately funded university research. Equally important, such policies would ensure that any increased private research funds flowing to universities (as a result, for example, of differential tax credits) improve rather than worsen their present precarious financial position and hence provide an essential part of the infrastructure needed for sound industrial development in Ontario.

Government has an additional critical role to play in this process: facing up to some politically unpleasant truths about the nature of the research enterprise. Governments that are serious about fostering research-based industrial development must resist their apparently overwhelming tendency to stifle research by attempting to co-ordinate it (and to direct it to currently fashionable objectives) and by ensuring that every locality gets its bit.[7] In both of these respects, of course, governments reflect deep-seated Canadian prejudices. Even the recent report to the Corporate – Higher Education Forum (1984), has a section entitled 'Collaboration is extensive but not evenly distributed' – as if such unevenness were a problem to be resolved rather than the outcome to be expected in a dynamic market-driven research endeavour. Spreading research funds, like fertilizer, at a rate of so many units per square kilometre, is not the best way to produce a large crop of viable ideas.

On the contrary, a good deal of evidence suggests that the best results from university/industry research efforts are likely to emerge when a number of such efforts are carried out more or less contiguously, permitting ideas and people to rub against each other in a continuous fashion. As an American commentator says:

> Faculty with ideas of commercial value . . . located closer to large cities . . . have more opportunities to discuss with potential customers the feasibility of their ideas, readier access to sources of financial support and, when the time comes to start operations, a larger and more varied labour force upon which to draw . . . [There are also more] examples of successful entrepreneurs to stimulate the interest and avarice of faculty members (Browne, 1983).

In short, those who have the most are likely to do the best. Concentration of effort in a few centres may not be fair, but it seems inevitable if governments in Canada or Ontario seriously want to play in the big international leagues.

Of course, permitting concentrated research efforts to emerge more or less spontaneously and supporting such concentration through, for example, increased funding to those who do the most research (Bovey Commission 1984) must be sharply distinguished from the tempting propensity for governments to pick out the favoured sectors or sites in advance, to shower them with funds, and all too often to continue to support them long after they should have been abandoned.

Federalism and industrial policy

The federal nature of Canada limits the ability of any single government to take a bold new direction with industrial policy. Would-be interventionists usually consider this fact a problem.[8] On the contrary, it may be an advantage. As Tarshis says (in a rather different context):

> With the future so unknowable, surely the best strategy for maximizing the probability of at least two or three hits would be to engage the best efforts of at least six or eight separate units in the search. (1984, 173)

A true federalist welcomes a fair degree of fragmentation, noting that any provinces whose policies are truly out of line will on the whole, be forced to adapt to reality – unless, of course, they are overly protected from the consequences of their folly by mistaken national policies (Bird 1985).

Whether one approves or not, federalism as it has developed in Canada is not a luxury that can be cast aside as we unite to fight in the war of all against all into which some say international economic relations are deteriorating. Our relatively uncoordinated and imperfect economic union doubtless has real costs. But co-ordination and harmonization also have costs, possibly high ones, such as the possibility of making really big mistakes, and benefits can be reaped from 'unco-ordination' (or competition, as it is more often called by economists).

To the extent that federalism is a necessary ingredient of Canada's continued existence as a nation, policies to protect declining regions (and even particular declining industries in those regions), may well be an inevitable component of industrial policy. For policy analysts to deplore this reality does no good. They are more profitably employed in fostering the adoption of forms of assistance that forward the adjustment to change that is the essence of any sensible industrial policy and that are socially acceptable within the Canadian reality.

For example, as already suggested, people-centred policies – education, human resources, training, mobility – constitute one of the most

important focuses of industrial policy in Ontario. These policies, however, inevitably give rise to problems in as regionally diverse and decentralized a country as Canada, in which many of the relevant policies are primarily under provincial control and conflicts between regional and national policy objectives are inevitable. Mobility within provincial borders, for example, is politically quite different from mobility between provinces. Many of the barriers to interprovincial trade and factor flows that economists so often attack can be interpreted as attempts on the part of local political constituencies to make up for their inability to erect explicit general barriers to such flows (as is commonly done at the national level). The costs of such barriers – in the sense of sheltering special groups from change (Olson 1982) – may indeed be greater than is customarily recognized, but the benefits in terms of maintaining regional communities may also be greater than conventional economics recognizes.

Thus, a central problem of industrial policy in Canada today is to design people-centred adjustment policies that will foster change without destroying communities. No easy solutions to this difficult task are at hand. We do suggest, however, that the terms of the industrial-policy debate should be shifted from an unproductive quarrel over which, if any, industries should be subsidized as potential winners to the real-world problem of how to wind down losers in a politically and socially acceptable way. In Peter Drucker's words 'The first step in a growth strategy is not to decide where and how to grow but to decide what to abandon' (quoted in Poe 1983, 37). The same thought emerges clearly in a recent remark by a prominent American commentator:

> New England is a prosperous region because it got out of its old dying industries. . . .If Washington had protected New England's old dying industries, the area would still be depressed. . . .To prop up dying industries will only prolong the pain. Whatever government does they will die in the end. (Thurow, 1981 2:32)

FINDING CANADIAN ANSWERS

Canadians are fond of looking to Japan as a model of how to run an industrial policy. The new federal Conservative government, for example, is reportedly considering setting up some sort of joint private public operation along the lines of MITI, the famed Japanese Ministry of International Trade and Industry (Gherson 1984). However, as Johnson (1982) points out in what is probably the most thorough study of Japanese industrial policy experience to date, it is not easy to draw lessons for North America from the unique Japanese experience.

Canadians have not, for example, given unequivocal first priority to economic development. They do not constitute a culturally homogeneous society largely united behind this overriding goal; they are apparently not prepared to delegate essential allocative decisions to a select group of expert central bureaucrats operating within a very vague and general legal framework; nor would they likely accept the degree of corruption that has almost inevitably accompanied the politicization of industry and the industrialization of politics in Japan. Unlike the Japanese, for example, Canadians have never been prostrated and poverty-stricken as a result of a devastating war. They have, therefore, never had to make drastic, conscious shifts in their habits in the past – and short of extreme adversity, they are not likely to be very willing to do so in the future. As Johnson, who is on the whole quite sympathetic to the Japanese model, suggests:

> Lacking a comparable consensus on goals, the United States might be better advised to build on its own strengths and to unleash the private, competitive impulses of its citizens rather than add still another layer to its already burdensome regulatory bureaucracy. (1982, 323)

Perhaps the same might be said of Canada. Canada can, however, learn two main lessons from Japan. First, as Samuel Johnson noted long ago, the prospect of being hanged in the morning concentrates the mind wonderfully. Japan lives on the economic edge: it must compete in manufacturing exports or die. Canada, in contrast, has so far always been able to lie back on its natural resources, permitting American capital and European immigrant skills to combine to provide its citizens with comfortable incomes. Second, a country's greatest natural resource is always its people. Japan has literally nothing else and has exploited this resource to the full. Canada, on the other hand, has never really used its people well because it has never had to and because it continues to be an establishment society in which not rocking the boat is a highly esteemed quality (Daly 1981).

On the whole, fascinating as tales from the far east may be, they are not likely to convey much useful information to Canadians unless they are studied much more scientifically, more seriously, and in more detail than has been the case to date. When Canadian technicians regularly scan Japanese-language materials for possibly useful information, when Canadian firms and government agencies regularly send staff to Japan to study and to learn, when new Japanese machines are regularly taken apart and reverse-engineered, and so on,[9] then we may perhaps begin to learn something useful from the Japanese experience. From this point of

view, of course, government actions such as Ontario's recent creation of technology centres have much to be said for them.

More generally, it is hard to learn much from such successes as Japan (and other recent, well-publicized examples of excellence) except that smart, hard-working people who have a lot to lose tend to do better than others – a fact that we presumably already knew.

Whether the Japanese will prove to be any better than the rest of us at getting out of dying industries remains to be seen. They clearly have not done nearly as well in this respect with regard to agriculture as has North America, for example, and it is not yet clear whether they will succeed in down-sizing such industries as shipbuilding and steel to the extent necessary to move with the times.[10] Moreover, the costs of Japan's industrial success have been high in terms of resource misallocation, environmental degradation, and, in some ways, suppression of domestic dissent to the overriding goal of growth. It is unlikely that Canadians in the 1980s could, would, or should act in these respects as the Japanese did in the 1960s and 1970s – or, indeed, whether the Japanese themselves will continue to do so. Finally, as Peter Drucker notes, although the Japanese have had a good run for a decade, they are by no means guaranteed success in the industries of tomorrow (cited in Poe 1983, 35). Perhaps 'success' in industrial policy is like 'success' in the stock market. Investment 'genius' has proven a fleeting glory in private financial markets – over the long run, even the best money manager is unlikely to do better than the average. The same seems likely to be true of public-sector planning.

On the whole, although Canadians would obviously be well advised to keep their eyes open on the world, including Japan, they must look to themselves for answers to their problems, not abroad.

MAXIMS FOR INDUSTRIAL-POLICY MAKERS

In general, this series of studies' close look at Canadian experience with industrial policy supports the set of 'maxims for industrial-policy makers' set out in Watson (1983b, 97-104). In conclusion, therefore, it seems fitting to recall these maxims, supplementing and adapting them to the Ontario case as appropriate.

– *If it's not broken, don't fix it.* Perhaps the most important lesson policymakers should learn, experience suggests, is when not to act. As Stein puts it, 'If it might break, don't go near it' (1985, 55).

If the market is to be retained as a major allocator of resources, then policy makers need not aim for aesthetic coherence. That one industry or input or technique is more or less common in the national, let alone provincial, economy than it is in the world economy should not worry them. There is no point in trying to produce an industrial structure that approximates some predetermined ideal. Instead, policy should aim at making only those interventions whose benefits appear clearly to exceed their costs by a margin sufficient to justify the necessary diversion of resources. This task is quite difficult enough without also trying to second guess the market.

– *If you can't fix it, don't try.* Policy makers would do well to accept – and, equally important, to try to convince the public – that many problems simply cannot be solved and therefore, should not be thought of as problems. Unfortunately, with so many demands for solutions – and so many would-be policy makers willing to promise a quick fix – it is sometimes difficult for incumbents to keep hands off. Nevertheless, there are many things government does not and cannot do well and may in the long run regret having tried to do at all. In particular, there is a virtually complete absence of the information needed in order to put into effect the economist's textbook solutions to various market failures, let alone to know if whatever is done has the desired effect. (The discussion of investment and R&D incentives in Chapter 4 should provide sufficient evidence of this view.)

– *If you're in the way, move.* Government itself often turns out to be a major impediment to the efficient functioning of markets. Above all, government policy should not be fickle. Examples of reversals of public decisions and of the inability of governments to make decisions promptly are common. If any policy instrument is varied too often, firms and individuals begin to discount its influence in their planning. As a result, it loses most of its potential usefulness and may become a positive hindrance to sensible private decisions.

Moreover, when government supports particular industrial activities, it inevitably changes the incentive structure. It creates potential profit for those who spend time and money cultivating the government's sympathy. Large amounts of resources can be obviously wasted in this rent-seeking process.

The hope that governments will desist completely from actions that do positive harm is probably forlorn, since both producers and politicians can so often profit by inducing inefficiencies (Hartle 1980). Making the process more open would help; at least citizens' groups and other public-interest lobbies, which turn too readily to government for a solution,

might learn that government is the problem, in many – of course, not all – cases.

Unfortunately, the parliamentary procedure as it has developed in Canada at both the federal and the provincial levels, is not particularly transparent in this sense. On the other hand, all is not lost: the very fact that Canada is a federal country, with two virtually independent levels of government, inevitably means that a fair amount of the political process is revealed to some extent in the course of the endless federal-provincial negotiations on a wide range of issues.

– *If you have to act, don't get fancy.* One of the most important lessons of all is that governments should keep their approach to industrial policy as simple as possible. By contrast, many recent proposals for an industrial strategy seem to suggest that government should involve itself in what amounts to picking and backing winners – in other words, in making detailed evaluations of the prospects for competitive success of individual firms and industries.

One difficulty here is that, for reasons that have to do with the Canadian public's apparent desire for financial probity and its fear of political patronage, governments are usually required to run themselves according to cumbersome rules. Making discretionary judgements, therefore, takes bureaucrats a long time, at least in comparison to the time frames of most businesses. Moreover, the difficulty of deciding precisely which firms or technological processes are likely to do well and which are not cannot be overemphasized. Perhaps there is no reason to suppose that bureaucrats have any worse information about the future than most banks or investment consultants (unless private agents, who are likely to suffer greater penalties if they get things wrong, work harder to get them right). But there is certainly no reason to expect government to have better information about such things than the private sector.

Perhaps the greatest difficulty with detailed interventionist policies, however, is that having become involved with a firm, locality, or industry, government inevitably finds it very hard to extricate itself if the investment goes sour. What happens if you pick a winner that isn't a winner? Do you close the only plant in a one-industry town? Not, in most cases, if you want to be re-elected.

For these reasons, the provincial government should do everything it can to avoid having to make detailed allocative decisions. Measures such as reductions in capital taxation, compensation of one kind or another for risk (including that of adjustment), perhaps limited general encouragement of R&D – these sorts of things are more suited to government's particular skills than the high-rolling required by a strategy of picking

winners (a strategy that, assuming efficient capital markets, is not likely to work for anyone for long except by chance).

– *Remember that long-term plans survive only with short-term payouts – and not always then.* Even the best-laid long-term industrial development plan cannot survive in the Canadian environment unless it provides adequate rewards to interested parties in the short run. As McLarty rather caustically notes about regional policy:

> The fact that what locals regard as a perfectly good region is suffering more from natural causes than from the ill effects of unrealistic federal policies, corporate conspiracies or external stupidity takes a considerable time to take hold. (1981, 96)

Much the same could be said about industrial policy.

To mention only one notorious case, the coal-steel complex on Cape Breton Island has been sustained almost entirely by federal and provincial subsidies for the past thirty years. It is impossible to believe that this prolonged and undignified resuscitation effort has done anything except prolong the inevitable, while wasting scarce resources. Yet the obvious long-term benefits to general well-being from removing this elaborate artificial support system have apparently never weighed heavily enough in the political balance to overcome the large and obvious short-term costs to those most directly affected.

As this instance suggests, however, it is always easier to agree on what should be done in principle than on exactly when it should be done. Rather than deal with the difficult compensation and adjustment problems of getting out of such declining industries, Canadian experience suggests:

> It is politically and administratively easier to pay millions to one improbable entrepreneur than hundreds to thousands of selected industries. . . . Nobody wants to change to a 10 per cent better farmer or fisherman, or a 10 per cent better assembly line worker. We all want to get our hands out of routine tasks into high technology. As a result, we usually sell ourselves on developments that involve glamour industries. (McLarty 1981, 96-9)

Alas, the glamour industries of today may too soon become the problem industries of tomorrow, as all too many examples of forced industrialization in various Canadian provinces have demonstrated over the years (Mathias 1971). And, as in the Cape Breton case, the short-term

political and social pain of reversing even clearly mistaken policies will doubtless often continue to outweigh the much larger long-term economic gains from doing so.

ADVICE TO ONTARIO

So far as Ontario provincial policy is concerned, the final moral of this tale is that the provincial government should keep on doing more or less what it has done in the past. So far, unlike Quebec (see Watson 1983a) or even to some extent Alberta (see Walker 1984), Ontario has not leapt headlong into the interventionist camp. It should not do so. It should, however, do more with respect both to adjustment policies and to developing human resources in general – and less in terms of propping up declining sectors and subsidizing this year's industrial favourites. Such advice is no doubt more pleasant to give than receive. In the end, however, any economist surveying the evidence to date on industrial policy in Canada must almost inevitably conclude, as did Martin Luther in a different context, 'Here I stand; I can do no other.'

Where Ontario stands – despite occasional outbursts of political rhetoric and aberrant rash actions – has generally been on the side of sound, incremental, industrial policies that focus on developing a good business climate, providing some general incentives to investment and research, assisting adjustment to some extent (through training programs), and developing the provincial infrastructure, not least in human terms. Although the last two need more emphasis, this is on the whole not a bad package for Ontario or for Canada.

The best industrial policies for Ontario now are measures such as upgrading the educational level of its people (for example, through meaningful continuing-education programs, better science teaching, and expanded postsecondary training), supporting sensible national policies (for example, reform of unemployment insurance, cautious moves towards improving competitiveness through free trade, easing monetary policy while tightening fiscal policy), and developing generous adjustment policies tied to change rather than to maintenance of the status quo. Any substantial efforts at more government-directed and subsidized expansion of particular industries, let alone particular firms, is not likely to be in the interests of Ontario's citizens as a whole or within the competence of the Ontario government.

Overall, the most appropriate model for Ontario – and perhaps for Canada – in this respect is not Japan but such small European states as Switzerland.[11] Katzenstein sums up their approach by relating a fable of the snake, the frog, and the owl.

> Fearful of being devoured by the snake, the frog asks the owl how he might survive. The owl's response is brief and cryptic: learn how to fly. None of the small European states has learned to soar like the eagle. What they have learned to cultivate is an amazing capacity to jump. Although they appear to land on their stomachs, in fact they always land on their feet and retain the ability to jump again and again in different directions, correcting their course as they go along. In a world of great uncertainty and high-risk choices, this is an intelligent response. Frogs can escape snakes, and the small . . . states can continue to prosper – not because they have found a solution to the problem of change but because they have found a way to live with change. (1985, 211)

NOTES

1 Actually, considering how very different the 1970s were from the 1960s, it is rather amazing how useful economic (and even econometric) models have been: obviously they were adapted as time went on – but that's the point! More basically, those who so often question the usefulness of economics on the grounds that the future will be unlike the past should prove it will be different. Unless serious efforts are undertaken to change matters, the future seems more likely to be the same self-interested hodgepodge as the past.

2 This section is based largely on Bird (1984a).

3 See Katzenstein (1985) for a convincing argument on the need for political underpinnings acceptable to everyone if societies are to cope successfully with change.

4 This point has of course frequently been stressed in the national context by such authors as Daly (1981) and Palda (1984). It is equally true and important in the provincial context.

5 What follows – based largely on Bird and Bucovetsky (1984) – is, in a sense, special pleading since this study comes from university researchers. Nevertheless, after considerable thought, and with due modesty, we have decided to include it because we think it both right and relevant.

6 At present, the federal government pays, at most and complaining, only 30 per cent more than the direct costs of a project. A common comparable figure in the United States is 150 per cent. The lowest possible estimate of a minimal standard is 50 per cent.

7 Several recent examples of the geographical balancing act come to mind.

– The extensive Sheridan Research Park complex in suburban Mississauga was apparently deliberately placed at a distance from Toronto's existing university-based research complex and the province's important Ontario Research Foundation was moved there from the University of Toronto's downtown campus.

– Both federal and provincial governments have been reluctant either to contract substantial ongoing tasks (for example, drug testing) to university labs or to construct their own research facilities in proximity to university facilities to encourage synergy.

– When the federal government, presumably after due and agonizing deliberations, decided to spend several million dollars on micro-electronic research, it scattered these resources across the country so as to achieve a nice regional balance, if not necessarily a viable research base.

– Similarly, when the Ontario government recently decided to foster industrial research through six technology centres, it located them across the province in such a way as to make it difficult for them to establish significant links with university-based researchers.

It is hard to discern much industrial policy logic in any of these decisions.

8 Of course, market-oriented economists are equally prone to dislike many of the realities of a federal system – and are, as discussed in Bird (1984a), equally likely to be mistaken.

9 This is more or less what Japan did systematically during its prolonged adaptive period of the 1950s and 1960s, and, indeed, still does, probably to a greater extent than any other country in the world.

10 See, for instance, 'Tokyo discovers industry lobbyists' (1983).

11 For an extended analysis of Switzerland's version of fiscal federalism compared to Canada's, see Bird (1985).

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